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Pharmaceutical Society of the South African Republic.
Central Pharmaceutical Association of N.Z.
Otago Pharmaceutical Association, N.Z.
Pharmaceutical Society of Queensland.
Pharmaceutical Society of South Australia.
Pharmaceutical Society of Tasmania.
Pharmaceutical Society of Western Australia.

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OUR DIARY FOR 1899.

The "C. & D. Diary" is used
Every day of the year,
All the year round,
In thousands of pharmacies
In every country in the world.

THE CHEMISTS' AND DRUGGISTS' DIARY, 1899, will begin a fourth decade of that *sine qua non*, and we anticipate making it better than its predecessors. We have to look far ahead in the preparation of it, because it takes six weeks or more to reach *C. & D.* subscribers in remote parts of the earth, and we like everyone to have the DIARY in hand by Christmas-time, so that he may make it ready for use on the first day of the new year. By next month we shall be putting it to press. We give this early notice of the matter in order that business houses may get ready their advertisements for the DIARY. There are, we understand, many regular advertisers with us who prefer to give special orders for their DIARY advertisements, and we strongly recommend them to inform our Publisher without delay what space they wish to have reserved. It will pay to take pains in drafting the DIARY advertisements. Each one speaks to buyers every business day of the year all the year round; therefore it is good to make the advertisement comprehensive, explicit, and illustrative of the chief goods and best bargains the advertiser has to offer. We see to the indexing by entering every article advertised in the encyclopædic "Buyers' Guide," which is not the least valuable business feature of the DIARY.

Summary.

THE need for division of the Minor examination is discussed on p. 402.

PLYMOUTH has had a newspaper-war about doctors and chemists (p. 392).

BRUNNER, MOND & CO. (LIMITED) continue the celebration of their jubilee (p. 393).

THE BOARD OF TRADE recommend steel drums for the shipment of vitriol (p. 392).

THE mysteries of the Bermondsey meat-extract trade have been revealed in a police-court case (p. 392).

A LIST of the Government appointments and honours open to pharmacists will be found on p. 425.

LONG LISTS OF CHEMISTS who have obtained wine-licences and wine and spirit licences are given on p. 394.

SOME HINTS ON THE STUDY OF BOTANY, especially the much-neglected physiology of plants, are given on p. 405.

A CORONER'S JURY have censured an unqualified medical assistant, and a Coroner has done "the like" to a chemist (p. 393).

BOOKS on "Practical Pharmacy" are the subject of an editorial *à propos* of a new one by Mr. E. W. Lucas (p. 403).

A SOUTHWARK girl did not find corn-solvent "shuffle off this mortal coil." It gave her "prison for fourteen days" (p. 392).

THE SHEFFIELD PHARMACEUTICAL SOCIETY has arranged with Firth College for a science course for students of pharmacy (p. 394).

THE FAILURES in the Major and Minor examinations during the past five years have been erratic. They are shown on p. 404.

MR. MACFARLANE, the Canadian Government analyst, has found belladonna-plasters sold in the Dominion to be poor in alkaloid (p. 398).

AN AMERICAN CHEMIST says that ether is a molecular body a thousand times lighter than hydrogen. He calls it etherion (p. 405).

EDUCATIONAL MATTERS occupy largest space in this issue. We deal in detail with the requirements for qualification in pharmacy, medicine, dentistry, veterinary surgery, and science (pp. 407-426).

MESSES, HOWARDS & SONS are signalling their second century by planning the removal of their chemical-works from Stratford to Barking (p. 400).

A MAN is charged with trying to raise a loan on the false pretence that he had a contract for the sale of Messrs. Maw, Son & Thompson's business (p. 399).

MR. J. C. UMNEY gives analytical factors to show that foreign oil of lavender does, Mr. H. W. Gadd notwithstanding, come within B.P. requirements (p. 428).

DR. CHARLES SYMES does not think the Major examination will be seriously affected by the new Act. He is judiciously reticent about making it confer an analytical qualification (p. 428).

AN EX-BELL SCHOLAR tells how to prepare for the examination, what life is at the School of Pharmacy, how to make the most of the time, and what the post-graduate possibilities are (p. 427).

CRUDE CAMPHOR is going up; phenazone is down again; the manna-crop is a failure, chamomiles are easier, canella-bark is scarce and dear, and trade as a whole is dull. Drug-auctions were held on Thursday, when plentiful supplies of senna, balsam of Peru, and one or two scarce staples were offered (p. 432).

English News.

Local newspapers containing marked items of news interesting to the trade are always welcomed by the Editor.

Shipping Sulphuric Acid.

The Board of Trade have recently issued instructions to shippers concerning the conveyance of sulphuric acid under deck. They recommend that the acid be contained in electrically-welded steel drums of about 0·8 inch in thickness, and the drums embedded in coal to a depth of not less than three-fourths the diameter of the drum. The quantity of coal must be sufficient to absorb any leakage from the drums, and for this purpose a depth of 1 foot of coal for every hundredweight of acid (or a minimum depth of 6 feet) may be deemed sufficient. The Board at the same time indicate the possible results that may be anticipated from spontaneous combustion under such conditions of shipment. The sulphuric acid escaping into the coal will not cause spontaneous combustion, but if the combustion takes place first the drums may be ruptured, and the acid allowed to escape, and the sulphurous-acid vapour thus produced will retard or extinguish the fire. They further advise that any coal that has been wetted with sulphuric acid should not be used.

For Extract of Meat.

At Southwark Police Court, on August 27, the public entrance to the court was blocked by a long line of Vestry vans, thirteen in number, loaded with 73 large barrels of mixed livers from Belgium and America, which had been seized at two Bermondsey meat-extract factories by Chief-Inspector Thomas and Inspector Owner. Immediately upon the arrival of Mr. Fenwick (the Magistrate) his attention was called to the condition of the livers, and he decided to make an immediate personal inspection of the seizure.

Mr. Payne, on behalf of certain consignees, said they would like to have an inspection by an expert at the wharf.

Mr. Fenwick said that could easily be arranged. He then proceeded to Montague Street and personally inspected the contents of the barrels in each of the thirteen vans. The Assistant-Inspector plunged his hands into the filthy, slimy mass, and brought up various livers of pigs, sheep, oxen, and, as he declared, horses also. They appeared to be diseased and were certainly putrid, the air being filled with a heavy, sickening odour, notwithstanding that the tarpaulin coverings of the vans were replaced as quickly as possible. Returning into court Chief-Inspector Thomas deposed that he went to some premises at the rear of 24, 25, and 26 Salisbury Street, Jamaica Road, Bermondsey, where he saw three barrels, open, containing what appeared to be livers, and also a number of other barrels. He had them all opened, and examined the livers. Nearly all were diseased, and the whole were quite unfit for human food. He saw the proprietor, Dr. Charles Sureties, of New Kent Road, meat-extract manufacturer, who told him the livers had been brought over for the purpose of making certain extracts and preparations from them. He seized 34 barrels on the doctor's premises.

Mr. Edwin, solicitor, said he appeared on behalf of Dr. Sureties, but would ask no questions.

Mr. Thomas, continuing, said he then proceeded to the manufactory of Messrs. Boffin & Co., Grosvenor Works, Fort Road, Bermondsey, where he found 44 barrels, containing livers that were perished, diseased, and rotten; and the slime was most offensive. The manager of the works gave him the firm's card, as follows:—"Boffin & Co., Grosvenor Works, Fort Road, Bermondsey, manufacturers of preserved provisions, soups, and all kinds of table-delicacies." He seized that consignment also, and produced labels showing that the barrels had been sent from America to the Continent, and transhipped to England.

Mr. Payne, on behalf of Boffin & Co., said he had no questions to ask, and did not think it would be much use to have any further examination of the livers. The barrels had only been received three or four days, and had not been opened for use.

Mr. Thomas: They were making extract from similar stuff while I was there.

The Magistrate ordered the whole to be destroyed, and the condemned consignments were removed to the Vestry wharf, where the barrels will be emptied, and their contents conveyed by barge to the Essex Deep, where they will be thrown into the sea. The trade-value of the livers was estimated at about 150*l.*, and with the barrels they weighed about 13 tons.

Hardly had the waggon-train of livers left the street before Mr. T. H. Jackson, the Lambeth inspector, arrived with a seizure of 83 cases of condensed milk, which Mr. Fenwick inspected in the yard. They were seized in a stable occupied by a dealer named A. Joseph, at 5 Little Windmill Street, New Cut, who said they were a "job lot." He did not appear, but it was stated that he consented to an order.

Mr. Fenwick made the order accordingly, and the putrid milk was then removed, but the smell remained in the yard for some time afterwards.

Corn-solvent for Suicide.

At Southwark Police Court, on August 27, a tailoress was charged on remand with attempting to poison herself with "corn-solvent." A police constable stated that on the afternoon of August 15 he was on duty in Tooley Street, when the prisoner fell into his arms, said she had taken poison, and became quite unconscious. Dr. Porter, of Guy's, said it was two days before the prisoner recovered. Corn-solvent was a thick viscous fluid, containing salicylic acid, and might cause death if taken in large quantity, but it was difficult to swallow, and there was no recorded case of death from it. The preparation was generally sold without any label of "Poison." The prisoner was ordered to find a surety or go to prison for fourteen days.

Chemists and Doctors at Plymouth.

In the course of a lengthy correspondence in the columns of the *Western Morning News* on the question of doctors' fees, "A Chemist and Druggist" kindled the blaze by protesting against "the growing practice of medical men dispensing their own medicines," and asked, "How is the poor chemist to live? Is it live and let live? Is it not extremely selfish and unfair treatment of men who do faithful service to the community?" "A Struggling Doctor" retorts: "As a medical practitioner, I protest against the growing practice of chemists prescribing for patients. How is the poor doctor to live? Is it live and let live? Is it not extremely selfish and unfair treatment of men who do faithful service to the community, and who have spent years in qualifying themselves for an honourable profession, to have the bread and butter taken out of their mouths by chemists, who have had no medical training, prescribing (as they do daily) for patients and flooding the country with quack-nostrums." The correspondent goes on to say that unless the poor, struggling, general practitioner dispensed his own medicine he would, in more cases than even now, receive no fee, and that "many doctors would prescribe for their better-class patients, did they not know that in many instances chemists have been known to copy prescriptions and use them for prescribing on their own account." A correspondent, signing himself "L.R.C.P.," remarks that "other professions are protected, and why not the medical?" He thinks it ought to be made a penal offence for anyone to prescribe except a duly-qualified person, and confidently asserts that it will be so in time. Among the subsequent letters on the subject is one from "Medical Practitioner," who remarks: "Medical men learn how to dispense medicine, that being a part of the curriculum. Chemists do not learn either anatomy, physiology, or anything which would qualify them to treat patients. 'A little learning is a dangerous thing.' How much more so in the case of the prescribing chemist. If the British public knew how little the chemist knows either of their constitution or ailments they would, for their own health, give the prescribing chemist a wide berth."

Stealing from Chemists.

Before the Norwich Magistrates on August 23, a girl named Williamson, 9 years of age, was charged, on the information of Fred Christopherson, pharmaceutical chemist, Swaffham, with stealing ten cigars from his shop on August 13. George William Hales, Mr. Christopherson's

assistant, said the accused came to the shop and asked for a pennyworth of chloride of lime. While serving her he saw her hand coming from the counter. He found in her hand a packet of cigars, which he identified as Mr. Christopherson's. The Bench sent the girl to an industrial school for six years.

The mother of the child was then charged by Mr. Christopherson with feloniously receiving one briar pipe, one box of cigarettes, one bottle of potash pellets, one tube of pills, a bottle of sweets, and a pair of nail-scissors, stolen from him within the past three months by some person or persons unknown. These articles were found at the accused's house, where the prosecutor went with Sergeant Flint. He (prosecutor) could identify them all as having been taken from his shop within the last three months. In cross-examination witness said he had no search-warrant. He was not aware that he should have had one. The Bench stopped the case, stating there was no *prima-facie* case, and discharged the accused.

Two brothers, named Glover, aged 11 and 9 respectively, were brought before the Burslem County Magistrates on August 24 charged with stealing a quantity of sweets and labels from the shop of Mr. Thomas Morris, chemist and druggist, Wolstanton. It appeared from the evidence that when the prosecutor's shop was opened on the morning of August 22 it was found to have been broken into and several bottles of sweets stolen. The police were communicated with, and on the boys' home being searched a number of Mr. Morris's labels were discovered. When charged with the theft the lads produced the stolen sweets. The Stipendiary Magistrate ordered six strokes with the birch rod for the elder boy and four strokes for the younger.

Lending Teeth.

On Friday Mr. T. J. P. Hartigan, Medical Officer of Health, applied to the East Grinstead Guardians for permission to purchase a complete set of false teeth for a female inmate, who had not a single tooth in her head, and consequently suffered much from indigestion, through not being able to properly masticate her food. Mr. Stenning suggested that the Board should grant the application, but that the teeth should remain the property of the Guardians. It was a serious matter, because once the Board commenced to supply teeth people would be coming into the house on purpose to obtain a set. Mr. Hartigan said the present set was necessary on medical grounds, and the Board decided to purchase them at a cost not exceeding 3*l.* 10*s.*, and that the teeth should be lent to the inmate.

The Unqualified Medical Assistant.

At the Hackney Coroner's Court, on August 30, Dr. Wynn Westcott held an inquiry respecting the death of Hilda Bailey, aged 20 months, the daughter of a clerk residing at Clapton Park. The father stated that the child was delicate, and while playing with a brother had been knocked over and hurt on the forehead by falling against a wash-stand. She complained of a bad headache, and was taken to Dr. Evans's surgery, Brooksby Walk, Homerton. An assistant, Mr. Roberts, saw the child, and though told of the injuries, said the child was suffering from teething-troubles. Deceased became worse, and Mr. Roberts called to see it. He did not call the next day, and the child appearing worse urgent messages were sent, and Dr. Duckett, another assistant of Dr. Evans, called and said the child was suffering from brain-fever. He visited the patient the next morning, but did not call again, though sent for three times, and the case was put into the hands of Dr. Armstrong, who was sent by Mr. Roberts, and who attended until the child's death. Dr. Armstrong, in reply to questions by the Coroner, said he believed Mr. Roberts was not a qualified medical practitioner. An autopsy had been made which showed that the cause of death was meningitis, probably set up by the fall. He was asked to attend the case because Mr. Roberts was too busy to go. Dr. C. A. Duckett stated that he was one of the assistants of Dr. Evans, who was at present away on his holidays. It was a large practice, and he had been very busy. There had been an epidemic of diarrhoea in the neighbourhood, and when he was called, not being able to go to two places at once, he had sent Mr. Roberts, thinking "half a loaf was better than no bread." The Coroner: You knew, of course, that Mr. Roberts was

not a properly qualified medical man, and yet you sent him to see a patient. The orders of the General Medical Council are very strict with regard to sending an unregistered medical man. You knew that, I suppose? The Witness: Yes. The jury returned a verdict to the effect that the child died of meningitis set up by an accidental fall, adding a rider to the effect that "Dr. Duckett was deserving of a severe censure for neglecting his patient, and for sending an unqualified medical man to see a patient," and asked that a report of the proceedings should be sent to Dr. Evans and the General Medical Council, so that they could take what steps they thought necessary in the matter.

"These Chemists Ought to be Stopped."

Mr. A. Hodgkinson, coroner, held an inquiry at Tottenham, on August 30, respecting the death of a child, aged 11 months, the son of a cutler's assistant. The mother stated that the child was seized with diarrhoea and sickness on August 23, and she took him to Mr. G. E. Morris, chemist, of West Green Road, and the chemist, after looking at the child, gave her some medicine, and told her to feed him on arrowroot. She did as she was told, but the child did not get any better, so she took him to the doctor, but death ensued on August 27. The Coroner: Why did you take it to a chemist instead of a doctor? The Witness: I thought he would give me something to stop the diarrhoea. The Coroner: The practice of chemists prescribing is getting very common, and I believe some action is about to be taken in the matter. A Juror: Is the chemist here? The Coroner's Officer: No; I informed him of the inquest, but he said he had no one to look after the shop. The Juror: Was it Mr. Morris himself? The Coroner's Officer: No; it was a young man, who said his name was Frank Altoft, and that he was not a registered chemist, but acted for Mr. Morris. The Juror: That makes it all the worse. The Coroner: Yes; he has less right than a qualified chemist to prescribe. Dr. William Miller, of 139 West Green Road, stated that death was due to collapse following summer diarrhoea. The Witness: He could not say whether he would have given the same medicine as the chemist, as he should want to examine the child first, and the medicine would depend upon the symptoms. The Juror: But a chemist does not examine the child. The Witness: Well, for myself, I should not prescribe unless I saw the child. A Juror: Quite right, too. These chemists ought to be stopped acting like doctors. People only go because they are cheap. Eventually the jury returned a verdict in accordance with the medical evidence.

A New Recreation-ground.

Messrs. Brunner, Mond & Co. (Limited), manufacturing chemists, Northwich, have offered the Barnton Parish Council a field in Nursery Road, Barnton, for use as a recreation-ground, on a 999 years' lease, at a yearly rental of 5*l.* The field is 3½ acres in extent, and the offer has been accepted by the Parish Council with thanks.

Brunner, Mond & Co.'s Jubilee.

The last of the series of treats to the employés of Messrs. Brunner, Mond & Co. (Limited), chemical-manufacturers, Silvertown, in commemoration of the jubilee of the firm, was held on August 27, when all the wives and children of the workers were entertained. The Silvertown works were prettily decorated with flowers, plants, and banners, and there tea was provided. After the meal Mrs. John Brunner presented to each child a box of sweets, with a promise that ere long each should also receive a jubilee mug. During the proceedings Mrs. Brunner was presented with a bouquet by Miss Minnie Westbrook, on behalf of the workmen, and Mr. Brunner returned thanks.

Damages against a Chemist.

At the York County Court, on August 27, a man named Bardy sued Mr. William Thomas Hey, chemist, Low Ouse-gate, for 50*l.* damages, alleged to have been sustained by the carelessness of the defendant's servant. The plaintiff stated that on Christmas Eve last he was knocked down in the street by a trap belonging to the defendant, driven by a youth named James Luckner. His right leg was hurt below the knee, the small bone being broken. For the defence the question was raised whether the driver of the vehicle was

defendant's agent. He had not been engaged by Mr. Hey, but had been asked by his brother, who was in Mr. Hey's employment, to assist him on that particular day. The Judge, however, held that the driver was defendant's agent, and that he was negligent. He gave a verdict for plaintiff for 30*l*., with costs on the higher scale.

Competing for the Crown.

At the meeting of the South Stoneham (Hants) District Council on August 25 a letter was read from Mr. Steele, chemist and druggist, Bitterne, asking that he might be included among those selected to supply disinfectants to the Council. The Sanitary Inspector said he had always bought from Mr. Pell, chemist and druggist, Woolston, but now he used very little disinfectants, and the cost for the past quarter was only 5*s*. The Council decided to invite the local chemists to send in a schedule of prices and quality of drugs.

Accident at a Chemist's.

An unfortunate accident befel a man named Northcott, who, on August 26, was engaged with other workmen in placing a new roof on a store belonging to Mr. E. H. Crook, chemist, Fore Street, Exeter. The man overbalanced, and fell a distance of about 20 feet into a narrow passage below. He was found to be seriously injured.

The Hypnotised Traveller.

The Edinburgh chemist, Andrew Haldon, who was last week remanded at Darlington on a charge of leaving an express train whilst it was in motion was again brought up on August 23, when it was stated that accused's brother had arrived from London, and had undertaken to take him home if discharged. The defendant was thereupon discharged on payment of 1*l*. 1*s*. medical fee.

Fires.

A fire, which threatened to assume serious proportions, broke out on August 29 at the rear of the chemical-factory of Messrs. Evans, Gadd & Co., wholesale druggists, Exeter. The efforts of the fire-brigade, however, averted a serious outbreak.

The Providence oil-refinery, Kirby Street, Greenlane, Hull, owned by Messrs. Webster & Ambler, was on August 25 nearly destroyed by fire. The outbreak occurred in one of the upper rooms, all of which were completely gutted.

The total amount of damage done by the fire which occurred last week at the premises of Mr. T. B. Blow, bees-wax-manufacturer, has been estimated at 5,000*l*.

A Pharmaceutical Curriculum in Sheffield.

We have received too late for classification in the article on "Educational Information" particulars of a scheme which has been agreed upon by the Sheffield Pharmaceutical and Chemical Society and the authorities of Firth College for the establishment of a curriculum of pharmaceutical tuition in the college. This scheme will replace the classes on botany and chemistry which have hitherto been conducted in the Society's own rooms, but the classes on materia medica and pharmacy will be continued in the rooms. Subjoined are the particulars:—

CHEMISTRY.—Practical and Theoretical: On Wednesday evenings from 6 P.M. to 9 P.M., at Firth College, commencing October 12. Professor, W. Carleton Williams; Demonstrator, Dr. George Young. Will consist chiefly of practical work, supplemented by about twenty lectures or demonstrations. Each student will work independently. Fee, 1*l*. 10*s*.

BOTANY.—Elementary: At Firth College, on Tuesday evenings at 8 o'clock, commencing October 11, Mr. B. H. Bentley, B.A., lecturer. Twenty lectures on structure and physiology. Fee, 10*s*. 6*d*. Advanced: By Professor A. Denny. Demonstrator, Mr. B. H. Bentley. A course of practical instruction in the Biological Laboratory, Firth College, on Thursday evenings from 6.30 to 9.30 P.M., commencing October 13.

MATERIA MEDICA.—Lecturer, Mr. John Austen; Assistant-Lecturer, Mr. E. C. Exell. A course of lectures and demonstrations, at 37 Surrey Street, in vegetable and animal materia medica, will commence on Monday, October 17, at 8.15 P.M. Fee, 1*l*. 1*s*.

PHARMACY.—Lecturer, Mr. C. F. Carr. A series of twenty lectures will be delivered at 37 Surrey Street, commencing on Friday, October 14, at 8.30 P.M.

Examinations will be held at the end of each of the

courses, and on the result of these prizes and certificates will be awarded. Further particulars may be obtained from Mr. S. T. Rhoden, 33 Church Street, Sheffield, to whom the fees are payable.

Chemists and Licences.

The following chemists have been granted off-licences for the sale of wines and spirits at the Brewster Sessions in their various towns:—

Messrs. Bell & Riddle, Hexham-on-Tyne.
Mr. W. Rigby, Sheffield Road, Barnsley.
Mr. L. J. Wells, 26 Tyrrel Street, Bradford.
Mr. A. A. Knight, 32 Westgate, Bradford.
Messrs. Waller & McIntyre, 9 The Walk, Rochdale.
Mr. F. H. Fresson, Stevenage, Herts.
Messrs. Martin & Palmer, East Street, Plymouth.
Messrs. Waller & Riley (Limited), Bradshawgate, Bolton.

The following have been granted wine-licences only:—

Mr. J. Walker, 2 Market Street, Cleckheaton.
Mr. A. A. Abbott, 30 Old Market Place, Cleckheaton.
Mr. J. T. Keinch, 83 Lee Lane, Horwich.
Mr. F. Green, 3 Stockton Road, Sunderland.
Mr. C. J. Chamberlain, 66 Church Street, Warrington.
Mr. E. H. Rogers, Wallasey Village, Cheshire.
Messrs. Young & Coley, White Hart Street, Wycombe.
Mr. T. Needham, Bird Street, Lichfield.
Mr. J. S. James, 112 High Street, Kinver.
Mr. H. Sains, 111 High Street, Brettell Lane.
Mr. A. Barlow, 8 Market Street, Hyde.
Mr. H. Mossley, Market Place, Redditch.
Mr. J. H. B. Green, 19 Wood Street, Swindon.
Mr. W. J. Smith, 22 High Street, Swindon.
Mr. A. F. Knight, Sandford Street, New Swindon.
Mr. H. C. Edwards, Queen's Road, Hastings.
Mr. W. Aston, 49 Chapel Road, Worthing.
Mr. T. W. Snowden, Billy Row, Bishop Auckland.
Messrs. Barker & Levie, West Hartlepool.
Mr. S. Turner, Hipperholme.
Mr. J. W. Block, 17 Market Square, Bromley.
Mr. B. Pearson, 32 Beckenham Lane, Bromley.
Mr. W. S. Thompson, Crown Street, Halifax.
Mr. A. Akam, 49 King Street, Huddersfield.
Mr. T. N. Andrews, 5 Frankfort Buildings, Plymouth.
Mr. H. W. Colley, Cleethorpe Road, Grimsby.
Mr. T. Wray, Tyne View, Lemington.

At Ryton-on-Tyne a meeting was held in the Parish Hall, under the presidency of the Rector (Canon Baily), at which a resolution was unanimously carried strongly protesting against the granting of an off-licence to a chemist's shop which is to be built in that village.

In the case of Mr. J. W. Cockcroft, chemist, Huddersfield who applied at the Huddersfield Brewster Sessions, on August 24, for a wine-licence for premises at Storthes. Moldgreen, it transpired that the notices had been served on a constable in the Dalton township, and as this was not in compliance with the Act, Mr. Cockcroft was advised to withdraw his application, which he did.

At the Liverpool Licensing Sessions, on August 26, Mr. J. Taylor asked permission to withdraw an application which had been made by Mr. W. H. Clubb, Smithdown Road, Wavertree, for an off wine-licence. This application was made, he said, owing to Lord Sefton's representatives having withdrawn their conditional consent to it.

At Reading Brewster Sessions, on August 25, Mr. E. Cardwell, chemist, Reading, applied for a wine-licence. Mr. Griffiths, who opposed the application on behalf of the Reading and District Licensed Victuallers' Association, stated that many chemists were in the habit of taking out a wine-licence and selling a great deal of wine to the detriment of the interests of the licensed victuallers and of the people living in the neighbourhood. The law at present enabled chemists to sell all kinds of medicated liquors without any licence from the Magistrates, and it was altogether false for chemists, in applying for a Magistrates' licence, to say they only wanted to dispose of medicated wines. What they wanted to sell were coca and other wines, which were in no sense medicated, and which were strongly denounced by the medical profession. Mr.

Wood, who also opposed, maintained that evidence of the character of the applicant should be produced to render the application valid, and pointed out that this had not been done. The licence was granted.

Instead of reporting that the wine-licence granted to Mr. E. Lemmon, chemist, of 47 High Street, Exeter, had been renewed at the annual Brewster Sessions for the city last week, the *Devon Evening Express* included Mr. Lemmon's establishment amongst those against whom proceedings had been taken during the past year. The attention of the paper having been called to the error, a public apology was printed in the next issue, attributing the mistake to "a culpable blunder on the part of our reporter," stating how the mistake occurred, and regretting the annoyance which their inaccurate report had caused Mr. Lemmon.

Mr. W. K. Inglis, chemist and postmaster, Delph, gave notice of his intention to apply for a wine-licence at the Brewster Sessions to be held at Uppermill on August 31. This was opposed by the local Temperance Society, who on August 24 held a public meeting of protest. The chairman of the meeting said Mr. Inglis's place of business being also the post-office he thought they had a right to oppose the sale of wines there, for if post-offices were to be turned into licensed premises they did not know where that sort of thing would end. A committee of opposition was appointed, and next day a petition to the head postmaster of the Oldham postal district was issued for signature. The petition urged upon the postmaster the necessity of using his influence to prevent the licence being granted.

Worse than Counter-prescribing.

A witch-doctor at Wells, named Chambers, has been sent to prison for two months for imposing on a person by "subtle craft." The police reported that people from all parts of the country wrote to or visited Chambers for the purpose of having "devils cast out" of either their sick children or their cattle. The witch's fee was 10s. 6d. Among the letters was one from a farmer thanking the witch for curing his cows and mare, who had been ill from the evil wishes of an enemy. Another letter asked "How to make love"; another if the writer was likely soon to become a widow. Another indicated that a clergymen had been writing for illumination on the black magic art. Prisoner pretended to consult an instrument and several odd volumes in cypher, and said he effected his cures by burning various drugs at midnight. He obtained his drugs from an alderman of the city, who is a chemist.

The C.A.M.W.A.L. Horses.

A Camwal driver was charged at the North London Police Court on Wednesday with cruelty to horses under his care. A constable said he was driving a pair of horses with the old sores freshly rubbed, and lame. The driver said he was a new hand and did not know there was anything the matter with the animals; and the horsekeeper who sent them out said he thought they had sufficiently recovered from previous trouble to be fit for use in the busy time. Mr. H. K. Shaw, F.R.C.V.S., said both horses were unfit for work owing either to sores or "splints," but rest and treatment would make them workable again in a few weeks. The sores on the animals might have been freshly rubbed while on the journey in question. The horsekeeper (recalled) said he would promise that the animals should not be again worked until they had been rested and properly treated. There was no wish on the part of the owners to be cruel to their animals. Mr. D'Eyncourt adjourned the case for three weeks to see how the horses fared meanwhile.

Sale of Rat-poisons.

An inquest was held at Rotherhithe, on Wednesday, concerning the death of Elizabeth Wellspring (22), late cook at the Albion public-house, Rotherhithe, who committed suicide by taking rat-poison. Dr. Macnamara, of Union Road, Rotherhithe, stated that deceased told him she had taken two tablespoonfuls of rat-poison. She added that she was very sorry, and did not know why she had done it.

The Coroner: How much poison is this stuff supposed to contain?—A 6d. pot of rat-poison is supposed to contain about 6 gr. of phosphorus, and 1 gr. is a fatal dose. A pot contains about 157 gr. of paste, and deceased took about

120 gr., so that she swallowed enough poison to kill five persons. It ought not to be possible for a person to buy, unrestricted, a pot of rat-poison containing sufficient phosphorus to kill half-a-dozen ordinary mortals. (Hear, hear.)

The Coroner: I quite agree with you. Rat-poison does not come under the first part of the Poisons Act.

Witness: The stuff is called "Rough on Rats," and the most extraordinary thing about it is that on the box is given the antidote to be used for persons taking it, which is a little common salt in water. This is likely to lead people astray, because a person wishing to frighten somebody might take a dose of the poison, thinking that they could be cured by swallowing some salt and water. This, of course, is a fallacy. Such stuff is not only rough on rats but rough on human beings.

The jury returned a verdict of suicide whilst temporarily insane, and added a rider as follows: "We desire the Coroner to write to the Home Secretary, calling his attention to the unrestricted sale of poisons, with a view to something being speedily done to restrict such sale."

Irish News.

Local newspapers containing marked items of news interesting to the trade are always welcomed by the Editor.

Prosperous Chemists.

The directors of W. & H. M. Goulding (Limited), chemical-merchants, Dublin and Cork, report a profit for the past year of 26,117*l.*, out of which a dividend at the rate of 7 per cent. per annum on the ordinary shares of the company is recommended, leaving a balance of 7,815*l.* to be carried forward. The reserve fund stands at 14,941*l.*

Messrs. Crosfield's Agent.

For having embezzled the sum of about 18*l.*, received from various traders on behalf of his employers, Messrs. Joseph Crosfield & Sons (Limited), soap-manufacturers, Warrington, a man named McCorry, an agent of the firm, has been sentenced by the Dublin Police Magistrate to one month's imprisonment.

Fatal Accident to a Scientist.

Mr. Edward Edwin Glanville, chemist, of Trinity College, Dublin, who acted as assistant to Signor Marconi in his experiments with wireless telegraphy in North Antrim, was last week killed by falling from a cliff into the sea, a distance of 300 feet.

Guardians and Drug-contracts.

The L.G.B. have written to the Listowel Board of Guardians saying that, having considered the subject very carefully, they felt constrained to inform the Guardians that in accepting the tender of Mrs. English, they (the Guardians) had acted very unwisely. Mr. McElligott said the letter was not a sanction of Mrs. English's appointment, and the L.G.B. should be asked whether Mrs. English's contract was sanctioned. This was agreed to.

Messrs. Thacker & Hoffs, wholesale druggists, Dublin, have written to the Killarney Guardians, returning a cheque dated December 29 last, for 186*l.* 10*s.*, stating that the date being so far back the bank would not cash it, pointing out that their bill was for 215*l.*, and that unless they at once received a settlement in full they will be obliged to seek other means of collection. The threat has had the desired effect.

The New Ross Guardians have been asked by the Local Government Board to explain why they gave their medicine-contract to local men instead of to Messrs. Hunt & Co., whose tender was the lowest. The Guardians replied that in some cases the local men's tender was lower than Hunt's; also that they noticed that Hunt & Co. quoted 9*d.* per cwt. for salts, and they thought with such a price they must put it on somewhere else.

The Horse Show.

The annual horse show has been held at Dublin, and large crowds of visitors attended. Exhibits of drugs and chem-

icals were made by Messrs. Paul & Vincent, who showed chemicals, linseed cake and oil, phosphate-powder, &c.; Messrs. H. M. Leask & Co., who claim to be the largest importers of linseed in cargoes into Ireland; Messrs. Hayes, Conyngham & Robinson (Limited), of Dublin; and the Bovine and Vinolia Companies and Messrs. Day, Son & Hewitt, of London, were also prominent.

A Belfast Branch.

Messrs. Fannin & Co. (Limited), surgical-instrument makers and company pharmacists, Dublin, have opened a branch at 26 Wellington Place, Belfast.

Recognising the New Pharmacopœia.

The Local Government Board have sent a copy of the following letter to every Poor-law Union in Ireland:—

The Local Government Board for Ireland desire to call the attention of the Board of Guardians to the issue of a new edition of the British Pharmacopœia, and to the fact that contractors for medicine are obliged by the terms of their bond to supply all drugs in accordance with the standard prescribed by the latest edition of the Pharmacopœia. The Local Government Board consider that the Guardians should instruct the Clerk of the Union to communicate with the medicine-contractor reminding him of his obligation under his bond; and that the Clerk should write to each dispensary and workhouse medical officer of the Union, pointing out that in future all medicines will be in accordance with the standard prescribed in the new British Pharmacopœia. The Board think that this latter course is advisable, inasmuch as considerable alterations in the doses of important medicines have been made in the recent edition of the Pharmacopœia. The Board have at the same time to request that the Guardians will be so good as to direct each of their medical officers to send, periodically, samples of drugs to the Clerk of the Union, to be forwarded to him to the County Analyst for analysis, and report in accordance with the terms of the medical contract and bond prescribed by the Local Government Board's General Order of February 8, 1889. The Analyst's report should in each instance be fully recorded on the Guardians' minutes for the information of the Local Government Board.

The Ulster Executive of the B.P.C.

The formal meeting of the Ulster Executive Committee on August 23, which we reported last week, was not quite the final function of that body. On Thursday, August 25, Mr. J. C. C. Payne, President-elect of the Conference, gave a dinner to the Committee. After dinner congratulatory speeches were made by Mr. McKnight, Dr. Fielden, Mr. Guiler, Mr. S. Gibson (Treasurer), Mr. Isaac Nicholl, Mr. John Watson, and Mr. Payne. Mr. Gibson stated that the guarantee fund would more than cover expenses. A musical entertainment followed in the drawing-room. It is stated that the Committee are prepared to invite the Conference again at no distant date.

New Books.

Any book named in this list can be supplied post-free to any part of the world on receipt of the published price by the Publisher of THE CHEMIST AND DRUGGIST, 42 Cannon Street, London, E.C.

Ashworth, J. R. *Introductory Course of Practical Magnetism and Electricity.* 7½ × 4½. Pp. 96. 2s. 6d. net. (Whittaker.)

Burchard, H. H. *A Text-book of Dental Pathology and Therapeutics.* Illus. (Philadelphia) London. 25s.

Gould, G. M. *A Pocket Medical Dictionary.* 6¾ × 3¾. Pp. 310. 2s. 6d. net. (H. K. Lewis.)

Hartley, W. N., Ramage, H. *A Determination of the Wavelengths of the Principal Lines in the Spectrum of Gallium.* (Scient. Trans. Royal Dublin Society, Vol. 7, Series 2, Part 1.) 1 plate. 4to. Pp. 6. 1s. (Williams and S.)

Hollopeter, W. C. *Hay-fever: its Successful Treatment.* 12mo. (Philadelphia) London. 5s.

Kerr, R. *Wireless Telegraphy, Popularly Explained.* Preace by W. H. Preece. 6¾ × 4½. Pp. 128. 1s. 6d. (Seeley.)

Manders, H. *The Ferment Treatment of Cancer and Tuberculosis.* Royal 8vo. 10s. 6d. (Rebman.)

Williams, D. *Medical Diseases of Infancy and Childhood.* 7½ × 4½. Pp. 650. 10s. 6d. (Cassell.)

Australasian News.

A MAORI PHARMACIST.—The youngest son of Henare Tomoana, chief of the Ngati-Kahungunu of Hawkes Bay, and a member of the New Zealand Legislature, is now serving his apprenticeship with Mr. R. M. Gatenby, pharmaceutical chemist, of Wanganui, and promises to make an intelligent pharmacist.

PALMERSTON BOTANICAL CURATOR'S REPORT.—The annual report of Mr. Holtze, Curator of the Botanical Gardens at Palmerston (South Australia), states that one species of rubber plant, the Ceara rubber, a species of Manihot, grows freely in South Australia, and seems thoroughly suitable to soil and climate. Indigo grows naturally as a weed in unoccupied parts of the garden, galengal-root, worth 17l. to 20l. per ton in the London market, has been grown during the year, and the cultivation of kola-nuts has also been begun.

SUPPOSED EUCALYPTUS-POISONING.—At the Horsham Hospital, Victoria, a lad was brought in who was thought to be suffering from poison by eating green berries from the pepper-tree. An emetic was administered. No trace of berries was found, but a strong smell of eucalyptus oil was developed, and it is presumed that he must have swallowed a quantity. The symptoms were almost identical with those of intoxication by alcohol; the boy was quite unable to walk, while his utterance was thick and indistinct, but he speedily recovered.

PHARMACEUTICAL SOCIETY OF AUSTRALASIA (THE VICTORIAN SOCIETY).—A special meeting of the Society, held on July 7, unanimously confirmed the resolution passed at the annual meeting, to the effect that any member of the Pharmaceutical Society of Australasia who for a period of twenty-five years had been a continuous subscribing member of the Society should, upon application in writing to the Council, be entitled to have his name placed on an honorary retiring members' list, and should be exempt from the payment of further subscriptions.

THE VICTORIAN CHEMISTS' CLUB.—A social meeting of this club was held at the College of Pharmacy, Melbourne, on July 6. Mr. Witt occupied the chair. There were about forty persons present, and an excellent programme of music, song, and recitation was very effectively carried out. Towards the close of the evening Mr. E. G. Owen, Hon. Secretary, stated that the club had finished the old year with a small balance, and hoped that all those present would become members and induce others to join also. A considerable number of subscriptions were taken.

NEW CHEMICAL-WORKS FOR VICTORIA.—Mr. R. J. Fletcher has established works at North Geelong for the purpose of manufacturing chemicals from waste products. He also manufactures rare chemicals and preparations for use in metallurgical processes. During the past twelve months between 900 and 1,000 tons of crude material have been treated, yielding anhydrous ammonia, ammonium acetate, nitrate, phosphate, chloride, sulphate, and liq. ammon. fort. Cream of tartar is also manufactured, as well as Glauber salts, zinc chloride and sulphate, and carbonate and oxide of magnesia. There are two branch works in Melbourne.

PHARMACY BOARD AND PHARMACEUTICAL SOCIETY IN NEW SOUTH WALES.—On July 13, at a special meeting of the Pharmaceutical Society of New South Wales, Mr. Bellemy, President of the Pharmacy Board, claimed that the Pharmacy Board should be recognised as the educating and licensing body in the colony, like the Pharmaceutical Society of Great Britain. Next day, at the Pharmacy Board meeting, he brought forward a motion to the same effect, but in neither case did he receive much support. The more general view among members seemed to be that the British Society exercises functions which are advantageously divided between Pharmacy Boards and the Societies in the colonies. The Boards, which have the administration of the law, are removed from sectional influences, and are elected by the whole body of men controlled by the law. It is no part of their duty to make qualification easier by providing "educational facilities." That is left to the voluntary efforts of those who are willing to make sacrifices to secure the future elevation of their calling, and to support societies established for that purpose.

French News.

(From our Paris Correspondent.)

QUININE-WINE FROM THE WOOD.—Quinine and Malaga wine is being put up by the Paris pharmaciens for family use in small casks of 5 litres at 16s., and 10 litres at 28s., cask included. This method is said to be appreciated by consumers.

PHARMACY IN ALGERIA.—By a recent decree of the President of the French Republic, the two articles of the new pharmacy law regarding the suppression of the diploma of pharmacien of the second class and the more severe regulations concerning foreign pharmacists desiring to commence business in France are applied to the French colony of Algeria.

A GROCER PROSECUTED.—A grocer named Carraud, who sold phosphated-quinine wine, has been condemned to pay a fine of 500f. (20l.) for illegal practice of pharmacy. The prosecution was undertaken by the Marne Syndicate of Pharmacists, who were awarded 25f. (1l.) as damages; but the defendant escaped paying the fine through the Court giving judgment under the Berenger (First Offenders) Act.

THE NEW TUNISIAN TARIFF.—Under the heading of "Raw animal substances used in medicine or perfumery," musk, cantharides, civet, castoreum, and grey amber, also all other similar raw substances, are admitted free. Sponges in the rough are also free, while prepared sponges pay 65f. per 100 kilos. Fixed oil, scented (for soap), volatile oils, or essences of rose, and other similar oils, pay 8 per cent. *ad val.* Balsams are charged 10f. per 100 kilos. Under "Juices of a special kind," raw camphor is rated at 2f., refined camphor 6f., manna 8f., opium 100f., aloes 3f. 20c., liquorice-juice 4f.—all per 100 kilos.

POCKET-SPITTOONS.—One of the suggestions made here by leading medical authorities, as a means of obviating the spread of tuberculosis, is to prevent expectoration in the streets, and especially in public vehicles, by consumptive and other patients suffering from lung-diseases. In fact, prohibitive notices are now put up. Many doctors now recommend patients to carry small pocket-spittoons with them. The idea is, of course, that the bacilli of tuberculosis can be destroyed, and the receptacle afterwards sterilised. These articles are essentially such as may very properly be sold by pharmacists; but I hear of one doctor who applied in over a dozen pharmacies without being able to get one.

THE CRADLE OF FRENCH PHARMACY.—A report current here recently that the ancient herb-market of the Rue de la Poterie, Paris, was to be suppressed, turns out to be without foundation. The Prefect of the Seine has decided to allow it to remain where it is. Not that this market is a very important affair nowadays, being restricted to a dozen or so vendors, who take their stand every Wednesday and Saturday on the edge of the pavement. The chief interest attached to it is that it dates from 1553, and has continued to be held in the same neighbourhood during the intervening centuries practically without interruption. It has the reputation of being the cradle of French pharmacy; but medicinal plants are no longer the fashion in Paris, and it looks as though the herb-market will gradually die from want of support.

"THE PUNISHMENT FITS THE CRIME."—The Paris *Figaro* tells a story of a dentist in a fashionable quarter who has an attractive wife given to cycling. One day, while she was out riding, a well-known young Vicomte passed her in his auto-car, made slight advances, and thought they were not resented. Later, he found an opportunity of speaking to her and asked permission to call, which was accorded. But the lady, taken perhaps with a slight remorse, told her husband of the adventure, and when the Vicomte appeared he was shown to the consulting-room and had to plead toothache. The dentist put the young gallant in an operating-chair, on the plea of examining his teeth, and before the unwilling patient knew what was happening one of his best molars was extracted. "My fee is 20f." added the dentist, which the Vicomte paid and was ceremoniously bowed out.

FRENCH CUSTOMS.—The following alterations have been made in the Customs Tariff:—Oxalic acid: Legal tare for

this acid, imported in wooden boxes or casks, to be 9 per cent. Permanganate of potash: Alteration of 5 per cent. *ad val.* duty into a specific duty of 10f. per 100 kilos. New instructions have lately been issued relative to certificates of origin of foreign goods as a result of a joint deputation last July composed of delegates from the London Chamber of Commerce and the British Chamber of Commerce in Paris. Such certificates are required in certain cases either for the purpose of securing the benefit of lower duties or taxes, or of obtaining admission free from some surtax. The Customs are not bound by the contents of such certificates, and officers are always at liberty to demand a legal *expertise* if they doubt the accuracy of the declaration. It has been alleged, however, that in many instances, without any reason to suggest that the declaration was false, officials have simply ignored these certificates, and the object of the new instructions is to prevent, as far as possible, such annoyances in future.

THE TROPICAL WEATHER we have had in Paris caused a marked increase in the mortality, it having augmented during the hottest seven days from a normal 840 to 1290. Deaths due to infantile diarrhoea rose to 285, as against 51 cases only in the preceding week. This caused considerable anxiety at the Prefecture of Police, and the following official communication was made to the newspapers last Friday:—"In view of the exceptional increase in the mortality of infants, due principally to infantile diarrhoea, as shown by the latest municipal statistics, the Prefect of Police called a meeting yesterday morning of the doctors of the epidemic service and the director of the Municipal Laboratory, and as a result recommends the following prescriptions to the population: (1) During the hot weather only give infants milk that has been either sterilised or boiled. (2) Do not use feeding-bottles with tubes. (3) Take the greatest possible care that everything the milk touches, including the feeding-bottle itself, has been washed in boiling water and afterwards steeped in a weak solution of boric acid. (4) Boil all the soiled underlinen. (5) Avoid giving children unripe fruit, and only ripe fruit in moderation. All fermented drinks should be taken with water, and only in small quantities. When Seine water is distributed, it should be boiled before use."

THE FIRST FRENCH PHARMACEUTICAL AUTHOR.—M. Dorveaux, librarian of the Paris School of Pharmacy, has lately published "Notes on the Life and Writings of Thibault Lespleigney." This apothecary, who flourished at Tours in the sixteenth century, was the first French pharmacist to write upon his art. His books are now extremely rare (of some only a unique copy is known to exist). He appears to have been born at Vendôme in 1496, and to have died at Tours in 1567. He was army contractor to Francis I., when that monarch was warring against Charles V., and complains, in one of his books, of having been compelled to destroy a supply of figs and grapes suspected of having been poisoned. He contributed, with André Vesale, to introduce "squine" into French therapeutics. His principal works are:—(1) a "Promptuaire des Médecines Simples" (1537); (2) a "Dispensarium Medicinarum" (1538); a pamphlet on "Touraine," and a little treatise on "Squine-wood" (1545). The "Promptuaire" is a rhymed description of each of the 165 drugs, alphabetically arranged from Agaric to Verdigris and Zedaira, terminating with a "Ballade to the Mother of Jesus." Like Chaucer's "Canterbury Tales," Lespleigney's Muse is by turns pious and profane, not to say Rabelaisian. Anxious, however, that the reader should not miss his pretty humour, he is careful to indicate his pleasantries (gross or refined) by a marginal note of "Jocus non inelegans." From his rhymed chapter on arsenic, we learn that this was the poison administered by the Comte de Montecuculli to the Dauphin (son of Francis I.), who died in 1536. The "Dispensarium" contains a summary of drugs, a manual of pharmacy, a formulary, and a dictionary. It was, in fact, the forerunner of the modern Codex, and had an immense success, passing through six editions in five years! But when Valerius Cordus published his "Dispensatorium," a little later, it fell into oblivion, and is now rare.

TO KNOW WHEN NOT to prescribe consult "Diseases and medics," published at the offices of this journal. Price 6d.; by post, 2s. 9d.

Colonial and Foreign News.

PERSONAL.—Mr. H. Davies, Curator of the Royal Botanic Gardens, Calcutta, has been selected to fill the post of Superintendent of the Government Botanic Gardens, Allahabad, in succession to Mr. J. Phillips, retired.

URUGUAYAN DUTIES.—The Board of Trade have received through the Foreign Office a despatch from her Majesty's Minister at Monte Video reporting that it has been decided to reimpose the additional 2½-per-cent. import-duty which was abolished in January last.

GERMAN APOTHEKER VEREIN.—The annual meeting of this Society was held in Cologne on August 23 and following days, under the presidency of Herr Frölich, of Berlin. An official welcome was given to the body by Dr. Telke, on behalf of the Government, and by the Burgomaster, on behalf of the city, after which the Verein settled down to business. The annual report took up, and matters arising from it, a good part of the first day, after which papers on practical topics were read and discussed.

INDUSTRIAL EXHIBITION AT GRAHAMSTOWN.—British manufacturers who intend exhibiting in the forthcoming South African Industrial and Arts Exhibition, to be held at Grahamstown in December next, include Messrs. Elliman, Sons & Co., of Slough, and Messrs. F. C. Calvert & Co., of Manchester. The Canadian Government has informed the Prime Minister of Cape Colony that arrangements will be made whereby Canadian exhibits for the South African Industrial and Arts Exhibition will be transmitted free of charge from the Canadian port of embarkation to Cape Town.

ORGANISATION is strong with Americans when a meeting is to be held. The following are sub-committees necessary to arrange for the joint convention of the National Wholesale Druggists' Association and the Proprietary Association of America, to be held in St. Louis on October 17 to 22:—Banquet, bicycle, carriages and drives, clubs, finance, headquarters, Illinois Glass Company's entertainment, inspection of points of interest, ladies' entertainment, president's reception, printing, publicity and promotion, reception, registration, St. Louis Newspaper Association entertainment, smoker, souvenir and badge, and theatre. Local wholesale druggists are preparing an elaborate programme for the entertainment of the 1,000 delegates who will attend the gathering, which, it is expected, will be the largest and most successful in the history of the associations.

DISPENSING-MISTAKES IN MEXICO.—A Mexican physician recently prescribed quinine capsules for a lady suffering from intermittent fever. Within an hour after having taken a capsule the patient died, expiring with clear symptoms of strychnine-poisoning. The arrested pharmacist claims the mistake was made by the wholesale drug-house. A physician who was called diagnosed the case as hysterics, and left a prescription for a few bromide-of-potassium powders, refusing any other help without having previously received his fee. He is bearing the unfortunate pharmacist company in prison.—In Mexico the law requires that all prescriptions shall be written in the metric system. A well-known American physician, disregarding this rule, wrote a prescription for 30 gr. of chloral hydrate, to be divided into fifteen powders, the medicine being intended for a child. The dispenser at the native drug-store, where the prescription was taken, divided 30 grammes into the required number of powders in place of so many grains. The life of the child was fortunately saved.

OPIUM-CONSUMPTION IN INDIA.—The *Friend of China*, the organ of the Society for the Suppression of the Opium-trade, contains an interesting account of the consumption of opium in India. In Bengal there was a considerable decrease in the quantity of opium sold during last year. This is attributed to the closing of "madak" and "chandu" shops, and to the high price of food. In Assam the opium-revenue has, since 1893, continuously declined, and in 1897 it was lower than in any previous year. The chief consumers of opium are found amongst the indigenous population of Assam, but their numbers are annually diminishing. Under the orders of the Indian Government, no licences have been issued in this province since 1896 for the preparation and

sale of "madak" and "chandu," and to this cause the fall in the issue of opium is attributed. The area under poppy-cultivation in the Punjab last year was 9,757 acres, against 12,741 acres in 1896. This cultivation has now been prohibited in most districts. The number of opium-consumers in the North-West Provinces and Oudh is estimated at 1 in 304, as against 1 in 274 in all British India. All over the Central Provinces high prices and generally depressed circumstances have tended to decrease consumption. The only part of India in which there has been any appreciable increase was Madras.

U. S. TARIFF DECISIONS. — The following are recent decisions relating to the classification of articles in the Customs tariff of the United States. Japanese needle-antimony is now dutiable at 20 per cent. *ad val.*, as "metal unwrought." Sheep-dip composed of sulphide of arsenic is entitled to free entry. Tobacco sheep-dip is assessed for duty at the rate of 20 per cent. *ad val.* as an unenumerated manufactured article. Coal tar sheep-dip is dutiable as a chemical compound at 25 per cent. The Board of Classification has overruled the protests of Meyers Brothers Drug Company and two other firms against undue assessment for duty on the importations of clinical and other thermometers. These articles were claimed by the importers to be dutiable at the rate of 45 per cent. *ad valorem*, but the Board has ruled that the duty as originally assessed is the correct one — viz 60 per cent. *ad valorem*. The claim of Schieffelin & Co. that salol was a chemical compound under paragraph 3 was likewise overruled, and the assessment reaffirmed at 55c. per lb. under paragraph 67. In the case of the Cromwell Steamship Company, a cargo of olive oil, valued at less than 30c. a gallon, packed in second-hand petroleum tins, was assessed at 50c. a gallon under paragraph 40, but was claimed to be exempt from duty under paragraph 626. Paragraph 40 provides a duty of 50c. on olive oil in bottles, jars, tins, or similar packages, while paragraph 626 exempts olive oil to be used for manufacturing or mechanical purposes only, and valued at not more than 60c. a gallon. The local appraiser claimed that the oil, being in tins, was dutiable, regardless of its quality, but the importers' claim of free entry was sustained.

BELLADONNA PLASTERS.—Mr. T. Macfarlane, chief analyst of the Inland Revenue Laboratory, Ottawa, Canada, has recently analysed forty-eight samples of belladonna plasters, collected in January last in various localities between Halifax and Ottawa, and has published an official report upon them. He points out that the British Pharmacopœia, 1885, did not give a distinct standard of alkaloids for the plaster, but it has been generally supposed that it should contain not less than 0.4 per cent. The new British Pharmacopœia prescribes 0.5 per cent. of the alkaloids. It would appear, however, that the standard required by the old Pharmacopœia was somewhat higher, for on page 102 of the new B.P. it is stated that “the present extract of belladonna contains 1 per cent. of alkaloids,” and a footnote mentions that this is one-third the strength of the average of the old extract, which must, therefore, have contained 3 per cent. of alkaloids. As the B.P., 1885, belladonna plaster contained one-fifth of its weight of extract, it should yield 0.6 per cent. of alkaloids. The following are the results of the analyses:—

	No. of Samples
Between 0·5 and 0·4 per cent. alkaloids ...	6
" 0·4 " 0·3 " " ...	4
" 0·3 " 0·2 " " ...	4
" 0·2 " 0·1 " " ...	10
" 0·1 " traces " ...	20
Containing no alkaloid	4
	—
	48

Mr. Macfarlane proceeds: "Assuming that all those plasters which contain less than 0.3 per cent. are adulterated, the proportion amounts to 79 per cent. of the number collected; and if only those containing over 0.4 per cent. are considered to be genuine, the proportion is 12½ per cent. This cannot be regarded as a satisfactory state of affairs. . . . The manufacturers are, of course, chiefly to blame; but, for various reasons, it is doubtful whether prosecuting them would result in obtaining convictions."

Legal Reports.

Maw's Business is not for Sale.

AT the Mansion House Police Court on Wednesday, Richard Richardson (36), who, it was stated, refused to give his occupation, was charged on remand before Alderman Sir David Evans with forging and uttering a document purporting to be a contract for the sale of the business of Messrs. Maw, Son & Thompson. Mr. Travers Humphreys appeared for the prosecution; Mr. Claxton, solicitor, defended. The opening statement of Mr. Humphreys and the evidence showed that on August 16 the prisoner called on Mr. Henley, the managing-director of the Union Contract Company (Limited), Walbrook, and, producing a document which purported to be a contract for the sale to him of the business of Messrs. Maw, Son & Thompson, Aldersgate Street, he asked, Mr. Henley to advance him 50*l.* upon it. The prisoner had previously told Mr. Henley that the business of Messrs. Maw, Son & Thompson was to be converted into a limited company, and that he had a commission-note for 10,000*l.* from Mr. Hyndman, which was his commission in regard to it. Mr. Henley informed the prisoner on August 16 that before he advanced any money on the document he must communicate with Messrs. Maw, Son & Thompson. Having done so Mr. Henley found that the document was a forgery. In June the prisoner called at the office of Mr. Barrett, solicitor, Poultry, and told Mr. Olley, Mr. Barrett's clerk, that he had arranged to buy Messrs. Maw, Son & Thompson's business, and that he wanted the contract put into legal form, and that he had arranged with Messrs. Maw, Son & Thompson that the purchase-price should be a sum equal to eight years' net profits. On July 1, the prisoner told Mr. Olley that he had an appointment with Messrs. Maw, Son & Thompson for the next day, and that he wanted the contract engrossed. The contract was engrossed and handed to the prisoner. The prisoner then went to the London office of the Lancashire Finance Company, and asked for an advance upon the contract. Mr. Hyndman, the manager of the Lancashire Finance Company, was away, and, consequently, no advance was made to the prisoner. The prisoner left the contract at the office of the Lancashire Finance Company, and afterwards called and asked for it back; but the acting manager declined to let him have it back, but gave him a typewritten copy of it, which was unsigned. The prisoner went away, and, it was alleged, subsequently wrote his own name and that of Messrs. Maw, Son & Thompson on the typewritten copy of the contract. It was subsequent to this that he called on Mr. Henley, and asked him to advance him 50*l.* on the document. Mr. Maw, a member of the firm of Messrs. Maw, Son, & Thompson, deposed that the document purporting to be a contract for the sale of their business to the prisoner was not signed by them. There had been no negotiations with any persons for the sale of the business or for converting the business into a limited company. Witness had never seen the prisoner before. Sir David Evans committed the prisoner, who said he was not guilty, and reserved his defence, for trial.

Sale of Food and Drugs Act.

MORE DEFECTIVE GREGORY'S POWDER.

AT Lambeth Police Court, on August 19, the Prosser Roberts Drug Company, of Walworth Road, were summoned, at the instance of Inspector Wilson, on behalf of the Newington Vestry, for selling Gregory's powder which was not of the nature, substance, and quality of the article demanded. A sample of Gregory's powder purchased at defendant's shop was certified by the Public Analyst to consist of rhubarb and ginger 33 parts, and official carbonate of magnesia 67 parts, while the British Pharmacopoeia requires Gregory's powder to be made entirely with light magnesia, and not with the cheaper carbonate. For the defence it was said that the assistant who mixed the powder was to blame. A fine of 40*s.* and costs was imposed.

SPT. ETHER. NIT.

AT Darlington on August 24 Edward Brunton, drysalter, was summoned for selling sweet spirit of nitre which Mr.

W. F. K. Stock, the county analyst, certified was deficient in nitrous ether to the extent of 36 per cent., but was not deficient in alcohol.

Mr. Parkin, for the defence, called Mr. Wilson, an independent analyst, who stated that the ether had been lost owing to the drug having been in stock for a long time.

Mr. Parkin urged that the certificate was not in order, and that therefore the prosecution must fail.

The Magistrates, however, overruled this objection, and a fine of 10*s.*, including the costs, was imposed.

OLIVE OIL.

AT Sevenoaks on August 26 Wm. Edmunds, grocer, was summoned for selling olive oil which the public analyst (Dr. M. A. Adams, of Maidstone) stated consisted entirely of cottonseed oil. For the defence Mr. Wardley stated that the constable who made the purchase simply asked for a flask of oil, and not for olive oil. His client kept pure olive oil in stock, but that was not in flasks; and when the purchaser asked for a flask with straw round it he was readily given lubricating-oil. The Bench dismissed the case.

The Apothecaries Act.

JOHN HAWORTH, of Blackburn Road, Accrington, who, as reported last week, was fined by the Accrington Magistrates 10*l.* and costs under the Medical Act on August 17 for using the description "doctor," was sued at the Accrington County Court on August 25, under the Apothecaries Act, for illegally practising as an apothecary. The defendant did not appear, and it was reported he had left the town. Mr. Slinger appeared for the plaintiff Society, instructed by Messrs. Hempsons, solicitors to the Medical Defence Union. After hearing evidence, his Honour decided that an offence had been committed, and awarded the penalty of 20*l.*, and the costs of four witnesses.

Gazette.

PARTNERSHIPS DISSOLVED.

Merry, S., and Sims, T. P., under the style of J. S. Merry & Co., Swansea, assayers and analytical chemists.

Meyer, J., and Meyer, J. A. E., under the style of Meyer Brothers, Leeds, herb-beer manufacturers.

Riches, C. H., and Riches, H. C., under the style of Carlton & Cecil Riches, Cardiff, Penarth, and Bridgend, dentists.

Thompson, A. T., and Thompson, E. B., under the style of Thompson Brothers, Leeds, wholesale druggists.

THE BANKRUPTCY ACTS, 1883 AND 1890.

RECEIVING ORDERS.

D'Odiardi, Edmond Savory, Silver Street and Kensington Park Road Notting Hill Gate, W., medical electricians.

Eady, George I., Enfield, surgeon.

Garwood, George James, late Norwich, dispensing chemist and druggist.

Robertson, David, Huddersfield, doctor of medicine.

ORDER MADE ON APPLICATION FOR DISCHARGE.

Wolff, George Gabriel Nathan Greenback (adjudicated bankrupt in the name of George Gabriel Wolff), Green Lanes, Clissold Park, and Acton Street, Haggerston, N., ink, gum, and stain manufacturer—discharge suspended for three years, ending August 2, 1901. (Public examination concluded July 23, 1895.)

MINERAL WATERS IN THE EAST.—The Consul-General at Bangkok writes that the importation of mineral waters from Europe is insignificant, their high price preventing their coming into general use. This price is increased still further by the loss occasioned by defective coking. Under such conditions it is impossible that natural waters can compete with the artificial soda-water made at Singapore, which is sold to the customer at \$1 per dozen bottles. One of the factories at Singapore sends each year to Bangkok about 6,200 cases, of six dozen bottles each.

New Companies & Company News.

NORTH-EASTERN SALT COMPANY (LIMITED).—Registered August 23. Capital 10,200*l.*, in 1*l.* shares. Objects: To carry on the business of salt merchants and dealers, miners of salt, alum, gypsum, and limestone, brine-owners, manufacturers of and dealers in chemicals, &c. The first directors are Richard Grigg, Redcar; John W. Watson, Stockton-on-Tees; Walter W. Storr, Redcar; Ralph Walker, Stockton-on-Tees; and Arthur W. Whipham, Saltburn.

WATERS & CO. (LIMITED).—Capital 10,000*l.*, in 5*l.* shares. Objects: To acquire the business carried on by Chas. W. Waters, at 7, 8, 9 and 10 Bateman's Row, Shoreditch, as "Waters & Co.," and to carry on the business of makers of methylated spirits, rectifiers, and distillers. The first directors are Charles W. Waters (governor), Albert H. Waters (deputy-governor), Edwin E. Salt, Frederick C. Hawkins, and Frederick C. Nichols. Registered office, 7, 8, 9, and 10 Bateman's Row, Shoreditch, E.

CAMPBOR SYNDICATE (LIMITED).—Capital 5,000*l.*, in 1*l.* shares. Objects: To enter into agreements with John E. T. Woods, Henry B. McKenna, Chas. H. Ewen, and J. E. Fisher, and to carry on the business of manufacturing chemists and manufacturers of camphor, camphor-substitutes, residual oils, and other by-products. The first subscribers (each with one share) are:—E. J. Edwin Walden, Olive Road, Romford, merchant; C. Lawrence, 128 Falkland Road, Hornsey, clerk; John Howitt, 34 Park Place, Ealing, clerk; Samuel D. Holmes, 45 Ramsay Road, Forest Gate, E., clerk; H. Gasson, 65 Fortune Gate Road, Harlesden, clerk; Frederick W. Loxton, 86 Herbert Road, Manor Park, E., clerk; John S. Mackie, 8 Cumberland Road, Manor Park, E., traveller. Director's qualification, one hundred shares. Remuneration, 50*l.* each per annum.

WRIGHT & GREEN (LIMITED).—Registered August 20. Capital 20,000*l.*, in 1*l.* shares (5,000 preference). Objects: To carry on the business of grocers, provision-dealers, dairymen, pork-butchers, soap-manufacturers, sugar-refiners, Italian warehousemen, oil and colour merchants, chemists, druggists, drysalts, manufacturers of and dealers in mineral and aerated waters, &c. The first subscribers (each with one share) are:—Ernest Green, 205 Lloyd Street, Greenheys, Manchester, cashier; Charles Green, 7 Dantzic Street, Manchester, provision-merchant; William Hesling, 32 Fairlawn Street, Manchester, manager; Alexander Pollock, 13 Monton Street, Moss Side, traveller; William Dickinson, 41 Doddington Street, Salford, traveller; George Wright, 159 Sussex Road, Southport, manager; and Mrs. Selina Walker, 13 Livingstone Street, Manchester. The first directors are Ernest Green, Charles Green, and William Hesling.

J. WALTERS & CO. (LIMITED).—Registered August 24. Capital 500*l.*, in 1*l.* shares. Objects: To acquire and carry on the business of chemists, druggists, patent-medicine vendors, &c., carried on by Joseph Walters and John Thompson under the style or firm of "Osmond & Co.," and to deal in drugs, chemicals, oil, colours, perfumery, mineral waters, &c. The first subscribers (each with one share) are:—Joseph Walters, post-office, St. Mary's Road, Portsmouth, Hants, chemist's assistant; John Thompson, 22 Pitt Street, Eckington, Derbyshire, grocer; Mrs. Alice L. Walters, post-office, St. Mary's Road, Portsmouth; Miss Julia A. Thompson, 22 Pitt Street, Eckington, Derbyshire; Mrs. Esther A. Walters, Penrhyn Cottage, John Street, Eckington; Thomas Walters, jun., Penrhyn Cottage, John Street, Eckington, insurance agent; and James H. Thompson, 22 Pitt Street, Eckington, Derbyshire, grocer. Table "A" mainly applies.

MARTINI OZONE COMPANY (LIMITED).—Registered August 22. Capital 10,000*l.*, in 1*l.* shares. Objects: To acquire any patent rights relating to improvements in vacuum dielectrics and electrodes, and apparatus for the production of ozone, or the employment of ozone for curative or other purposes, to enter into an agreement with Dan Martini, and to carry on the business of chemists, druggists, oil-merchants, manufacturers of explosives, &c. The first subscribers (each with one share) are:—Geoffrey Dunham-Massey, 8 Princes Street, E.C., secretary; James Cawson, 8 Alfred Place, Bedford Square, W.C., clerk; Henry J. Mouritz, 35 Queen Victoria Street, E.C., agent; Dan Martini, Ivy Lodge, Til-

ford, Surrey, contractor; Benjamin Nash, 11 Poultry, E.C., accountant; Jas. W. Brown, 11 Anwell Street, Pentonville, clerk; and Edmund J. Heath, 45 Mayton Street, Seven Sisters Road, N., clerk. The first directors are Dan Martini and John Dunham-Massey. Registered office, 8 Princes Street, E.C.

ERASMIC COMPANY (LIMITED).—Capital 100,000*l.*, in 10*l.* shares (5,000 preference). Objects: To enter into an agreement with Joseph Crosfield & Sons (Limited) for the acquisition of certain trade-marks, brands, designs, secrets, and processes, and to manufacture, sell, and deal in soaps, candles, colours, dyes, paints, chemicals, drugs, explosives, &c. The first subscribers (each with one share) are:—Joseph J. Crosfield, Netherdale, Frodsham, manufacturer; Edward E. Bernhard, Bank Quay, Warrington, manufacturer; Wm. H. Robinson, 49 Wilson Patten Street, Warrington, secretary; Edmund A. Rice, 54 Manchester Road, Warrington, gentleman; Harry Clayton, 230 Manchester Road, Warrington, cashier; Geo. H. Platt, Howley Quay House, Warrington, clerk; E. H. Bernhard, 31 Avenue Mansions, Frolgnal, manager. Director's qualification, 100*l.* Remuneration, as the company may decide.

THE net profits of the Deutsche Gold und Silberscheidanstalt for 1897-98 amount to 892,100*m.* (as compared with 897,755*m.* in the previous year), which enables the company to pay a dividend of 12½ per cent.

THE CIVIL SERVICE SUPPLY ASSOCIATION during the past half-year bought goods to the amount of 683,765*l.*, and sold goods to the value of 799,056*l.* The gross profit on the trading amounted to 117,877*l.*, and the sum of 2,410*l.* was received from other sources, making a total income of 120,287*l.* After allowing for interest on the reserve fund the net balance for the half-year amounted to 22,653*l.*, to which was to be added 4,942*l.* brought forward, making a total of 27,596*l.* Out of this 12*s.* is paid in respect of every ten 1*l.* shares, 1,000*l.* granted to the pension and gratuity fund, 250*l.* to the employes' provident fund, and 5,077*l.* carried forward. The proportion of interest from the reserve fund, being 9*l.* for ten 1*l.* shares, is also paid to each shareholder.

Trade Notes.

THE Dartford Urban Council have passed the plans submitted by Messrs. Burroughs, Wellcome & Co. for the erection of new buildings at the Phoenix Chemical-works, Dartford.

ARMBRECHT'S NEW IDEA.—Messrs. Armbrecht, Nelson & Co. inform us that they are not yet prepared to present pictures with 10*l.* orders, but only with orders for twelve-dozen lots at 19*l.* 8*s.* 10*d.* The presentation with 10*l.* orders is at present only under consideration.

MR. R. C. COWLEY, of the Liverpool School of Pharmacy, is undertaking the standardisation of such preparations as tincture of opium, cinchona, &c., at moderate charges. This is a convenience for the busy pharmacist, who otherwise might be tempted to purchase preparations now required to be standardised ready made.

MESSRS. MÖTTERSHEAD & Co., Manchester, have issued a new edition of their "Pharmacy Notes" for the medical profession, with a tabular appendix in which all articles in the B.P. 1885 and 1898 are compared, doses and alterations in the strengths being included. The "Notes" make a convenient pocket-book.

MR. HENRY C. STEPHENS, M.P., sends us a pamphlet containing an interesting account of the history of his ink-manufacture, with a number of views of his factory and offices. The manufacture was begun by the father of the present head of the firm in 1834, and Mr. Stephens has now his son associated with him. No formulæ are given in the pamphlet.

THE INCOME-TAX ADJUSTMENT AGENCY, of 12 Poultry, E.C., have sent us a copy of the new edition of their "Taxpayer's Cash-book" (2*s.* 6*d.*). It is drawn up especially for use in small businesses where no self-checking system of bookkeeping is in use, and if accurately kept will show the profits of the business in a way that will satisfy the Income-tax Commissioners.

PHOTOGRAPHIC MOUNTANT.—Messrs. Johnson & Sons (Limited), 23 Cross Street, Finsbury, E.C., are selling a special mountant for photographs. It is put up in 6 $\frac{1}{2}$ and 1s. jars, with screw-cap. The consistency is very nice, and from trials we have made we find it is a good sticker. The mountant is neutral to test-paper, and so is not likely to injure the photographs mounted with it.

"GASTRIQUE" is the name of a new vermifuge for dogs. It is the invention of Mr. J. F. Chambers, F.C.S., of Dursley, a dog-fancier and headmaster of the local grammar-school, and the medicine is highly spoken of by doggie authorities. Gastrique acts, not by expelling the worms in the old-fashioned way, but by dissolving them in the system, the solution passing away with the faeces. Mr. Chambers wants agents among chemists, and he announces that the retail prices will be protected.

GARDNER'S "RAILWAY READY-RECKONER AND RAILWAY CHARGES GUIDE" (4s. net), just published by Messrs. McCorquodale & Co. (Limited), 41 Coleman Street, will be found of great value to all traders who have to pay much for carriage of goods. It provides for the prompt ascertainment of the proper freight-charge for a package of any weight at any rate per ton, so that carriers' charges can be checked instantly if the ton-rate be known. An incidental but, perhaps, more important use to which the tables can be put is by showing how in many cases savings can be effected by the carriage of packages of greater weight than 3 cwt. An illustration is given thus:—A grocer pays 3s. 11 $\frac{1}{2}$ d. for carriage of two bags of tapioca from London to Leeds at 23s. 9 $\frac{1}{2}$ d. per ton and 2s. 4 $\frac{1}{2}$ d. for one bag of rice at 19s. 2 $\frac{1}{2}$ d. per ton = 6s. 3 $\frac{1}{2}$ d. for the two consignments. But if consigned together at the higher rate the carriage would be 5s. 10 $\frac{1}{2}$ d.

MESSRS. HOWARDS & SONS, manufacturing chemists Stratford, have purchased land, situate between Barking and Ilford, for the erection of a new factory. Mr. David Howard, interviewed in respect of this announcement by the representative of the *West Ham Guardian*, is reported to have stated that the firm, after a century's work in Stratford, are contemplating the removal of their works by degrees, as they get the new buildings erected on the land they have bought at Barking. The decision has been induced, he told the reporter, by the rating in West Ham. "The result of our rating-appeal," he said, "was to convince us that it was impossible to carry on our manufactures advantageously in the Borough of West Ham, and therefore, instead of spending considerable sums in increasing our works here, we have bought land, and are arranging for erecting factories to provide for not only new extensions, but also for the gradual removal of the work which we carry on here. It is with some regret that we are arranging for the ultimate severance of our connection with the parish which has lasted so long, but the extreme application of an unjust law of rating renders West Ham one of the most undesirable places in the kingdom for a manufacturer to work in. Other firms are in a similar position. I know of large works that would have been erected in this borough, but, for the same reasons that are driving us out, have been set up abroad. House-property rated at one quarter of its annual value may pay even West Ham rates, but factories rated at three or four times their rent cannot."

Marriage.

ROOKE—DAVISON.—At Wigton, on August 17, Mr. Moses Rooke, chemist, Carlisle, to Miss Davison, eldest daughter of Mr. T. J. Davison, of Wigton.

Deaths.

CHAMBERS.—At Scarborough, on August 29, Mr. A. N. Chambers, J.P., managing director of Messrs. Newton, Chambers & Co. (Limited), Thornccliffe, Sheffield, manufacturer of Izal and its preparations.

FERRALL.—On August 23, at his son's residence, 67 Lower Mount Street, Mr. Robert Ferrall, father of Mr. A. T. Ferrall, Registrar to the Pharmaceutical Society of Ireland.

HADFIELD.—At Newark-on-Trent, on August 27, Mr. W. P. Hadfield, pharmaceutical chemist. Aged 87. The late Mr. Hadfield was born in Newark on December 3, 1811, and was educated at Grantham, and afterwards at Sutton-in-Ashfield. On leaving school he was apprenticed to Mr. R. M. Dale, chemist, Nottingham, and at the expiration of his apprenticeship became an assistant to Mr. Suow, of Newark. Next he went to London, and was for some time with Messrs. Hearon, McCulloch & Co. While in London Mr. Hadfield acquired and elaborated his hobby for natural history, and his wanderings in Epping Forest, Hornsey Wood, Wimbledon, and other haunts in search of butterflies and moths laid the foundation of the rare and valuable collection which he has left behind. Mr. Hadfield was an authority on entomology, and, in conjunction with his friend and brother-naturalist, Dr. Footit, got together a collection which was ultimately sold for 2,000 $\frac{1}{2}$. Throughout his long life Mr. Hadfield took a keen interest in politics. In his younger days, through the influence of Cobden and Bright, he was a red-hot Radical, and opposed the return of Mr. Gladstone when the late statesman first essayed to enter Parliament as the representative of the borough of Newark. Later, however, the influence of a brilliant young local politician converted the thorough-paced Radical into a true-blue Tory, and he remained an ardent supporter of the Conservative cause until his death. Mr. Hadfield was an unambitious man, always declining to serve on the Town Council, and on several occasions he refused to be nominated for the mayoralty. He was, however, one of the old Town Commissioners, a director of the Waterworks, a trustee of the Newark Minor Charities, and one of the originators of the Mechanics' Institution.

HILL.—On August 24, at Froxmer Court, near Worcester, Mr. Thomas William Hill. Aged 55. Mr. Hill was a member of the firm of Messrs. Hill, Evans & Co., vinegar and British wine manufacturers, Worcester.

JONES.—On August 30, Mr. W. Jones, chemist and druggist, Porthcawl, Glamorganshire. Aged 29.

THOMAS.—At Barry Port, South Wales, on August 25, Mr. Thomas Rees Thomas, chemist and druggist. Aged 48. The late Mr. Thomas, who was only ill four days, was well known and much respected in the district. Deceased was related to Mr. Lloyd Morgan, M.P.

WALTON.—Suddenly, at Wolverhampton, on August 27, Mr. John Walton, chemist and druggist. Aged 47. Mr. Walton had been in Wolverhampton for about twelve years, and at various times had acted as temporary dispenser at the Wolverhampton General Hospital, the Women's Hospital, and the Eye Infirmary, as well as at the Queen's Hospital, Birmingham. It appears, from the evidence of the widow at the inquest, that deceased had been suffering from diarrhoea for some time, and on the morning of his death he rose from his bed before daylight, complaining of diarrhoea-pain, and went downstairs to the shop for the purpose of obtaining a mixture to give him relief. He returned shortly afterwards with a draught in a glass, which he drank, and went to sleep immediately afterwards. About 6 o'clock Mrs. Walton again awoke, and found her husband dead. Dr. Mactier, who was called in, deposed to examining the medicine-glass, which contained some chalk mixture, but no evidences of opium or other poison. After evidence had been given by deceased's brother, also a chemist, the inquiry was adjourned for a *post-mortem* examination to be made. At the resumed hearing Dr. Mactier stated that he had made a *post-mortem* examination, and had found the lungs and brain congested; and he considered that death was due to congestion of the brain, brought about by poisoning. He had preserved the stomach for analysis, which the Coroner directed to be handed to the County Analyst, and the inquest was again adjourned for three weeks.

THE OPTICAL TRADE IN DURHAM.—There is not in Durham city a gentleman especially devoted to the business of the optician and photographic-instrument dealer. The demand for these articles is at present supplied chiefly through Mr. Joseph Chapelow, chemist, of Claypath, and Mr. Wm. Sarsfield, chemist, of the Market Place. There are in the city a large number of people devoted to the pursuit of amateur photography, and there is a most successful local camera-club.—*Optician*.

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Editorial Comments.

Educational.

WHEN the "Progress of Pharmacy" was commenced by Jacob Bell, scientific education in this country was a chaos. Even the practice of medicine, which for generations had been protected by examination requirements more or less based upon a compulsory curriculum, had not acquired a uniform standard of knowledge as a minimum for registration. Medicine was the only profession, outside law, in which a definite course of study was required in the early fifties. Veterinary surgeons and pharmacists had endeavoured voluntarily to improve the education and status of their devotees, and dentists were not lacking in desire for qualification and statutory recognition; but the systematic control of the education and examination of practitioners of medicine and its various branches is not more than forty years old. The progress made in that comparatively short period is marvellous, as a perusal of our "Educational Information" shows. We are all familiar with what has been done in pharmacy since 1863, but few probably realise how great have been the changes upon the Minor qualification since 1878. When the Pharmaceutical Society had the Pharmacy Act placed in its hands for administration, its councillors were not over-sanguine about the splendid thing the nation had given them; for a new-born Act always looks a cast-iron affair, and nobody in 1868 realised that the Act had been drafted in such elastic terms that the Pharmaceutical Society would be able, within thirty years, to make the Assistants' examination a more searching examination than the Major of that day. Yet that has been done. So well did Irish druggists appreciate this fact when they obtained an amendment of the Irish Pharmacy Act a few years ago that they had the schedule of the druggists

examination embodied in the Act—where it stands a fixed quantity, and the druggists with it. We do not regret the elasticity of the British measure. Education has advanced all round since 1868. Schoolboys now have a smattering of science, and many of them know at 15 or 16 as much chemistry as the average Minor man, say, of 1870. It is right that the Minor examination should, in these circumstances, progress; but we again appeal to the Pharmaceutical Council to consider how hard the burden is they have placed upon assistants by increasing the stringency of the examination without dividing it. The experience of medical examining boards is against their policy, for as the curriculum and requirements for that calling have been extended, power has been given to the examiners to divide and subdivide the examinations, so that the students may acquire one or two subjects thoroughly, and satisfy the Board upon them, rather than stuff themselves with half-a-dozen at a time. In medical qualification subdivision has worked admirably; it is giving us a better race of practitioners, and the risk of illegal practice has not been increased. We believe the Pharmaceutical Council are perfectly sincere in their caution about the division of the Minor. They question (1) whether they have the statutory power to divide it, and (2) if division would not create a race of half-qualified men, who would be a danger to the fully qualified. The first objection is, we think, invalid. The Society's power to divide the Minor examination into two portions has already been exercised by making it a two-day examination, with an interval between the days; and there is nothing in the Act to prevent them making the interval three months, six months, or a year. Even if the Examiners only had the power to refer candidates back to the study of weak subjects for three or six months (and there is not the slightest legal objection to this), that would be a gain to pharmaceutical education. Experience in the medical examinations is in favour of such reference, and, as the Pharmaceutical Council merely require a by-law to bring such a change into operation, no time could be better for adopting it than the present, the by-laws being under revision. The second objection to the division of the Minor is based entirely upon the misapprehension that the first part passed would carry with it a certificate and registration; therefore that the men who had passed so far would pose as qualified persons. Experience in medicine is against this view entirely, and one has only to turn to Ireland to find how little a lower but non-qualifying standard of examination is desired in pharmacy. The same would obtain in Great Britain, we feel sure. There the desire is to obtain the statutory qualification, which gives a man his market value, and enables him to get the full privileges of the Pharmacy Act. In advocating this division we know that the Pharmaceutical Council and Boards of Examiners agree with us in principle. Mr. Carteighe's first Pharmacy Bill recognised the principle, and, surely, if division was needful fourteen years ago, it is doubly needful now that the examination is so much more onerous. The question of feasibility is the only one that divides us, and if that is earnestly considered by the Council they will find a way to division, and thereby do more probably for the good of pharmaceutical education than has been done since Jacob Bell called the druggists of London together to oppose Mr. Hawes's Bill, and from that meeting created a Society "for the purpose of advancing chemistry and pharmacy, and promoting a uniform system of education of those who should practise the same." It is distinctly an obligation of the Pharmaceutical Council to remove anything which retards, rather than promotes, education, and the onerous nature of the Minor with its six subjects is inimical to educational progress.

"Practical Pharmacy."

A BOOK which, before its publication, is recommended by so representative a body as the Pharmaceutical Society of Great Britain to the younger branch of the craft as a text-book, is, indeed, a rarity. That is a distinction which was conferred fully a month ago, in the School of Pharmacy prospectus, upon Mr. E. W. Lucas's new book, "Practical Pharmacy," published on Friday of last week. The distinction is shared by another work which has not appeared—viz., one by Professor Greenish on "Materia Medica." Manuals of pharmacy have always appealed to the drug-trade, perhaps because some of them have embodied personal and practical experience. The first and best known in modern British literature, apart from valued "Commentaries" and "Dispensatories," was Brande's "Manual," first published in 1825. It was an attempt to deal more fully with the galenic part of materia medica than had been done before, and it influenced the "Dispensatories" which were published in this country up to the sixties. Several books of a similar nature appeared about the same time, but Brande's held its own until far in the thirties, and went through several editions. Not, however, until Theophilus Redwood, in 1849, translated Mohr's "*Lehrbuch der pharmaceutischen Technik*" was practical pharmacy treated thoroughly and well in English literature. Mohr and Redwood's "Practical Pharmacy" only saw one edition, yet up to the present time it has remained in demand, and the Nestors of the craft have an affection for it which is not misplaced. Parrish's "Practical Pharmacy" was the next book of importance. The first edition of it was published in Philadelphia in 1859, and, although American in origin and purpose, no British pharmacist who had in him the spirit of his craft cared to be without a copy of it; and that feeling remained until Remington's more modern work succeeded Parrish's in 1885. Meanwhile Barnard S. Proctor's "Lectures on Practical Pharmacy" had been delivered to a narrow circle in Newcastle-on-Tyne, and a larger audience demanded them in book-form in 1873, and twice since has that admirable book been republished. Then came Whitt's "Elements," and several excellent American books; to these may be added R. A. Cripps's "Galenic Pharmacy," which since 1893 has by common consent been regarded as the British students' manual of the subject. Now we come to Mr. Lucas's book and the circumstances of its publication with the fact that the publishers, Messrs. J. & A. Churchill, have given to the world previous volumes on the same subject, indicates that we are dealing with a particle in a dynastic succession. We find it difficult to classify the book which the Superintendent of Messrs. John Bell & Co.'s laboratory has given us. There is in it plenty of individuality, but it lacks in originality of design. Were we to set down in parallel columns the subjects in the first two parts of Mr. Lucas's book—"General Processes and Descriptions of Apparatus" and "Pharmacopoeial Preparations"—and the first two parts of Remington's—"Descriptions of Apparatus and . . . General Pharmaceutical Processes" and "Official Pharmacy"—the earlier work would get credit probably beyond what it deserves. It is, however, politic in cases of close analogy of this kind that the later author should make some acknowledgment to the earlier's work. As Mr. Lucas has not done so, we take it that he is prepared to justify the origin of his treatise. It must not be forgotten that any new writer on practical pharmacy starts where his predecessor leaves off, and finds the subject systematised in a definite way which he cannot ignore. Thus the pharmacy schedule of the Minor examination takes a certain order of progress, and this order also is more or less apparent in Mr.

Lucas's book—a point which teachers will appreciate. Part III. is devoted to "Dispensing," Part IV. to "Pharmaceutical Tests, Volumetric and Gravimetric Analysis," Part V. consists of "Tables," and Part VI. is "Urine Analysis." "The intention of the author has been to write a book for students," says the preface, and he has certainly produced a readable and instructive volume. Apparently, however, older practitioners have been kept in view, for by copious illustration of processes by means of figures of apparatus Mr. Lucas has embodied information of the character given in "The Art of Pharmacy" which we published in 1837, and of which an improved form is reprinted in THE CHEMISTS' AND DRUGGISTS' DIARY for the current year. The illustration method is one of the best for instructing the students, and Mr. Lucas's expositions are generally expressed in terse language, the involved disquisitions, which so frequently muddle students who are grinding for an examination, being absent. The first 249 of the 523 pages, which comprise the volume, are devoted to the larger pharmaceutical operations, but these also drift into the dispensing part, which is brief and general. The idea of incorporating volumetric and gravimetric analyses in the book is good, considering the way in which Mr. Lucas treats the matter—viz., in the application of the methods to testing medicines, and the chapter on urine analysis will doubtless be an advantage, although its presence in a book on "Practical Pharmacy" is questionable. Taken as a whole, the book is one which meets the requirements of students, and qualified men will find some good ideas in it. It contains many useful practical details and hints from experience, as well as a number of things (such as the manufacture of ophthalmic discs) which are "published for the first time." There are many things in it to challenge criticism. If we mention some of them it is because the book is strong enough to stand the test. Mr. Lucas says it is generally considered that much of the efficacy of *spt. ether. nit.* is due to aldehyde. This assertion is not supported either by published statement or physiological fact. Aldehyde is an extremely variable constituent of the spirit, as it is not only oxidised into acetic acid, but polymerised into paraldehyde, which breaks down again, and so on for half a lifetime, aldehyde being found in the spirit at the end of thirty years and after all nitrous constituents have vanished. While dealing with nitrous ether we would point out that the process which is given on pp. 167-8 for *liq. ethyl. nitritis* violates chemical knowledge if not the official requirement—"ethyl nitrite is obtained by interaction of alcohol, sodium nitrite, and diluted sulphuric acid at a low temperature," says the Pharmacopœia. Mr. Lucas directs the ethyl nitrite to be distilled by heat. In the chapter on tinctures, specific gravities of B.P. tinctures are given, and the yields of those made by maceration. The specific gravities are, in almost half the cases, precisely the same as those given by Mr. J. C. Umney in this journal (April 30, page 711), and the rest differ to the extent only of one or two units in the third decimals. This is an instance of uniformity of results by two workers on different materials, which, we think, is unprecedented in pharmaceutical literature. The yields of maceration tinctures are also practically identical. Mr. Lucas lays stress in speaking of percentage solutions on the fact that in true percentage solutions the solvent is weighed. Unfortunately, water as a solvent only appears to be considered. This is the fatal error of true-percentage-solutionists; and we may exemplify it by adapting a sentence on page 162:—

A gallon of aqueous solution of mercuric chloride 1 in 1,000, should contain 70 gr., but if prepared with alcohol (90 per cent) it will contain 58.38 gr.; both contain 1 in 1,000 by weight, the aqueous solution the same by volume, and the alcoholic one 1 in 1,200 (nearly) by volume.

The italics are ours. The adapted sentence is the logical outcome of Mr. Lucas's statement, but we do not think it is what he means. His intention is to impress upon the student the fact that if the solid is taken by grains the solvent must not be taken in minims (1 minim = 0.911 gr.). This is what British students should remember. We have several other passages marked upon which there will be difference of opinion, and many which we desire to praise, but need only mention that the process for making Bland's pill-capsules (page 235) is covered by letters patent. Although Mr. Lucas has escaped producing a pharmaceutical classic he has given students of pharmacy a book which is well adapted for their requirements.

Utilising the Major Examination.

THE correspondents who this week discuss the proposal to give a specific value to the Major certificate by converting it into a guarantee of analytical skill do not help us much. Dr. Symes's letter is a response to our request for his opinion, and it deals mainly with the prophetic aspect of the question. The ex-President of the B.P.C. holds the official view that the recent Act will not seriously affect the number of the candidates for the Major, even though the special inducement for passing it is destroyed. Even if that view is a correct one, however, it does not follow, as Dr. Symes sees, that the Major examination may not be made more useful. He carefully avoids committing himself to approval of any proposal, but feels sure that the Council of the Society "would be prepared to give due consideration to any practicable proposal having for its object increased benefits to those who pass the examination." Waiting for an impulse. That, as we all know, is the characteristic of modern leadership.

Our other correspondent, "T. H.," finds the correspondence on this subject exceptionally useless, and therefore joins in it. We may assume that it is better now, but we confess that we have not an exact idea of what "T. H.'s" comments aim at. He quotes (but we are not sure whether with approval) from the editor of the *Pharmaceutical Journal*, who replies to a correspondent on this subject, advising all who aspire to be analytical chemists to become connected, if possible, with the Institute of Chemistry. Of course only very rash persons will retain an opinion after that oracle has spoken; but, as the utterance does not seem at all relevant, it may be assumed, as has often happened before, that the authority has not yet grasped the idea. The point is, in a few words, this: the qualified chemist and druggist has already advanced a good way in the art of analytical chemistry. He is invited to proceed to a further examination, and it is now suggested that his next step should be in the direction of greater efficiency in analysis, which is the most obvious development of high-class pharmacy. If the Institute of Chemistry will accept our Minor examination *pro tanto*, and give us their qualification as the crown of further studies and a further examination, so much the better. But if they will not do so, the question is whether the Major examination cannot be utilised for the purpose.

THE MAJOR.

The changes brought about by the new Pharmacy Act are likely to affect pharmaceutical education only in the higher, or Major, branch; for, although the gulf between the Minor and it is not wide, and the Pharmaceutical Society has been anxious to get men to go in for the Major, the encouragement given by a reduced fee and a written ex-

amination has not been successful. The figures for the last five years are interesting. Here they are:—

	1833	1834	1835	1836	1837
<i>London—</i>					
Examined ...	140	136	130	111	96
Failed, per cent. ...	55.7	50	53.8	50.4	46.8
<i>Edinburgh—</i>					
Examined ...	12	11	16	19	10
Failed, per cent. ...	41.6	45.4	50	63.4	90

The steady decrease in numbers is as notable as the improvement in the passes—in London. Edinburgh scarcely counts, the numbers being so small; but the Edinburgh examiners seem to be unmerciful in rejecting Major candidates, while in London the feeling rather is (so it is said) that a man should be allowed to get through the Major if he is at all decent, because it is to his credit that he has come up at all. Does that account for the decreasing failures in London?

THE MINOR.

The schedule of the Minor examination, which was introduced in 1893, has had a disastrous effect upon students, and has peculiarly altered the conduct of the two examining boards. Prior to 1893 the London board examined three to four candidates for every one examined in Edinburgh, and out of every ten men examined in London about four passed, while in Edinburgh about six passed out of ten. With the new schedule and professorial examiners matters changed; but we shall allow the figures to speak for themselves:—

	1893	1894	1895	1896	1897
<i>London—</i>					
Examined ...	817	970	819	793	863
Failed, per cent. ...	65.1	64.5	70	67.2	68.7
<i>Edinburgh—</i>					
Examined ...	372	440	435	655	578
Failed, per cent. ...	50.5	53	58.3	62.9	67.1

The increase in the number of candidates in Edinburgh is known to be due to the idea that the examination is easier there; the published results up to 1897 showed that a higher percentage passed in Edinburgh than in London. But, alas! the boards are now so well drilled, so closely in touch, that the percentage of failures at each centre is practically the same. The increase of candidates in Edinburgh is due to more going there from this side of the Border. They have now found out that the Scotch examiner's heart is as hard as the English one, and this year many have saved their railway fares, for the figures so far are:—

Minors examined in London ...	897
„ „ Edinburgh ...	411

The October examination will take the London numbers into four figures, and will make them a record for the present schedule.

THE STUDY OF BOTANY.

If a canvass were made of teachers and examiners in pharmacy, it would be found that botany is, of all the Minor subjects, the one which students know least about when they leave the counter for the pharmacy school, and the school for the examination-hall. This would not be the case, a teacher writes to us, if apprentices would try to do something in their spare time; and this is what he recommends them to do:—

Purchase an elementary text-book, read it carefully, and, if necessary, a second time. Then take some flowers—if in season, the ones mentioned in the text-book—and notice the points mentioned, comparing the characteristics with those of other flowers. When possible the whole plant, including the root, should be examined; in fact, the best way of all is to endeavour to obtain a complete plant actually growing in soil, and day by day, in leisure time, to take first one part and then another, examining organ by organ until one is quite familiar with the plant, and able to recognise the principal peculiarities when they occur again. It is a wise plan to start, book in hand, with the root, and work

upwards until the flower is reached, allowing no part to escape notice. As the last organ to be noticed in this preliminary examination is the fruit containing the seeds, it is good to obtain seeds from some other plants—beans and peas being specially adapted for the purpose—and place between flannel kept moist watching first the process of germination and then the gradual development of the plant. If the would-be chemist has up to this stage evinced not the least interest in botany, this simple experiment will so unfold a small portion of the wonders of Nature that it will engender in his mind a desire to see more of these things, and so convert his study in this subject from what has hitherto been a burden into a pleasure. After the forms and structure of plants, which is known as their morphology, have been studied, their life should be noted—how plants live, why they die, what helps to bring these conditions about. The part of botany which treats of these things is known as physiology, and should not be attempted until the student has obtained a very good knowledge of the morphological part of the work. Then come classification and microscopical botany.

Here we cut off our contributor's copy, as we merely wished to convey the excellent idea which he gives in the above. It is the start in botany that is the difficulty. One associates fields and gardens with the science, and few think that such things exist for them; so they do nothing to the science.

PLANT PHYSIOLOGY.

Our contributor thinks physiological botany should not be touched by the beginner, yet his scheme embodies a physiological experiment. In our experience physiological botany is most interesting, especially to chemists' assistants. We have lately been reading Mr. S. A. Moor's translation of Professor Detmer's "Practical Plant Physiology," and have been delighted with it. It is all experiment, from beginning to end. For instance, one takes a seed, weighs it, places it in a culture-glass, weighing all the nutriment supplied to the seed, and the thing is let grow until a time arrives when the young plant can be taken out and weighed, or even an analysis of its constituents made roughly or precisely. Here is a bit about one of the earlier experiments. It is one in which the influence of carbon dioxide is determined by growing plants in a covered glass with fertilised water as the "soil":—

Access of carbon dioxide from the atmosphere is excluded. If we expose the apparatus to direct sunlight, we see that the plants keep up a rapid evolution of oxygen at the expense of the carbon dioxide dissolved in the water. We fix our attention on particular plants, and determine from time to time—say, every half-hour—the number of bubbles of gas which they liberate in the course of one minute. It is found that the evolution of oxygen gradually becomes weaker and weaker, and finally [about six hours] the production of oxygen entirely ceases. If we now lead some carbon dioxide into the water, the evolution of oxygen recommences.

Why were we not told to do such things as this when we were students? They are intensely interesting, highly instructive, and can be done so easily—in fact, "while the tinctures percolate." The Detmer-Moor book is divided into five sections—viz., I. The food of plants; II. The molecular forces in plants; III. Metabolic processes in the plant; IV. Movements of growth; and V. Movements of irritation. It is a book which lovers of botany will appreciate. Everything in it is not needed by the Minor student; but those who take a real interest in botany should buy it, or try to get it through our Students' Corner. There is plenty of chemistry in it, too. Swan, Sonnenschein & Co. (Limited) publish the book at 12s. While we are writing about botany we may call attention to "The Botanist's Vade-Mecum," by Mr. John Wishart, a pharmaceutical Herbarium medallist. The "B. V. M." is a synopsis of the divisions and subdivisions of the vegetable kingdom, with a "Where is it?" index at the end, which gives one the reference to any genus in a second. It is cleverly done. Messrs. E. & S. Livingstone publish the little book.

SUBTLE SCIENCE.

Is it not time that chemists should demand aerial investigators to take pause? One of them, Mr. Rydberg, has in-

formed the world that metargon very probably fills the hitherto supposed void which we call space—interplanetary space to be strictly correct, for there may be space beyond the planetary sphere of influence for all we know. He advances these facts as proof of his statement. Metargon is found (1) in the sun's spectrum; (2) in the spectrum of the outer beams of the solar corona; (3) in the spectra of comets which traverse space as we know it; (4) in the gases of meteorites; and (5), according to Ramsay and Travers, in the earth's atmosphere. There we have the connection complete from earth to sun; *ergo*, metargon is what we have all been taught to call ether—that imponderable, non-molecular fluid which has been so essential to our theories of a world outside this globe which we live on. It would be nice to let the ether remain a theory; it has not the slightest effect upon the Bank-rate, nor has it ever been known to depress the price of ipecac. It is entirely outside the range of the cutting chemists, and does not inflate balloons; it is, in short, immaterial to existence. Nevertheless, and alas! Mr. Rydberg has been displaced in speculation by an enterprising American chemist, who has upset all things by discovering that the ether is a gas called etherion (doubtless labelled so from the earliest times), and is 1,000 times lighter than hydrogen. He told the American A.S.S. all about it the other day, and as we derive our information from the *Star* it must be correct. The American chemist's name is Mr. Charles Brush—which is appropriate, considering the clean sweep his discovery should make of all dynamic theories.

MANAGING A BUSINESS.

The little personal note which we publish at the request of the ex-managing director of Lewis & Burrows (Limited) is suggestive. We have had two letters from Mr. Griffiths, and we confess we do not perceive what exactly was the wrong impression which our report of the meeting conveyed. But the point which strikes us as of trade-interest is the lavish way in which the company was, and as far as we know is, managed. There was, of course, a manager in each of the shops; these were under the control of a "general manager"; he was supervised by a "managing director"; the chairman of the company, we presume, had some authority over the managing director, and the board of directors controlled the whole concern. Not quite, however, for the secretary seems to have dictated to the board, and then the general meetings of shareholders must be regarded as a final tribunal. All these officers, of course, expect to get incomes out of the business, and the shareholders look blue if there is not 10 per cent. left at last for them. Do chemists who know their business, and keep for themselves all they earn, profess that they cannot meet competition of this character?

Business Changes.

MR. F. W. DOWNES has opened a pharmacy in Manchester Road, Altrincham.

DAY'S METROPOLITAN DRUG COMPANY (LIMITED) have opened a pharmacy at 6 Broad Street, Reading.

MR. T. G. PARKINSON, chemist and druggist, of Burnley, has purchased the business of Mr. Allan Sutton, Liscard, Cheshire.

MR. J. EDMUNDS, chemist, High Street, Kingsland, will shortly open a new pharmacy in High Street, nearer to Stoke Newington.

MR. R. W. WATSON, chemist and druggist, of 81 Crosby Street, Maryport, has disposed of his business to Mr. T. Hardy, chemist and druggist, of the same town.

MR. G. H. NICOL has opened a new pharmacy at 73 St. Paul's Road, Seacombe, Cheshire. The fixtures, bottles, and

fittings were supplied by Messrs. Ayrton & Saunders, of Liverpool.

THE business carried on by the executors of the late Mr. Albert Archer, at 526 Abbeydale Road, Sheffield, has been acquired by Mr. Charles Dann, pharmaceutical chemist, of Whitlington Moor.

MESSRS. H. A. SCHILDKNECHT & Co., manufacturers of druggists' sundries, surgical instruments, and hospital-furniture, have removed from 3 Paper Street, Red Cross Street, E.C., to 16 Long Lane, Aldersgate, E.C.

MR. W. R. SMITH, chemist and druggist, Princes Road, Liverpool, has purchased from the executors of Mr. Robert Thomas the business carried on by that gentleman for many years at 38 Linnet Lane, Sefton Park, Liverpool.

MR. CHARLES W. KROHNE and Mr. Henry F. Sesemann, trading as "Krohne & Sesemann," surgical-instrument makers, of Duke Street, Manchester Square, have transferred their interests in that business to Mr. Charles Henry Sesemann and Mr. Henry John Sesemann (sons of Mr. H. F. Sesemann), who will carry it on under the old style. Both of these younger partners have been associated in the management of the business for many years.

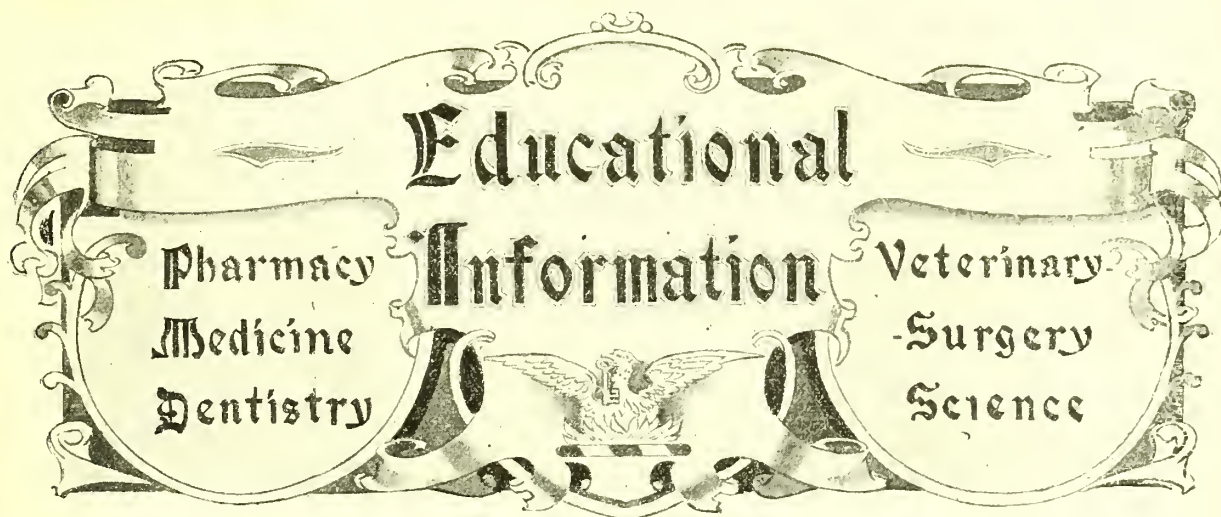
Personalities.

ON Monday last, at the first meeting of the Droitwich School Board, Mr. Stephen Harris, chemist, High Street, Droitwich, was unanimously elected Vice-chairman of the Board.

MR. MAY DAVIS, the aerated-water maker, of Westminster, is the inventor and patentee both in Europe and America of the "Colossal See-Saw," which Mr. Imre Kiralfy is to erect at Earl's Court, Paris, and New York. It will lift passengers by a gentle yet exhilarating motion to a greater height than that of the cross of St. Paul's.

MR. J. E. GRIFFITHS, formerly managing-director of Lewis & Burrows (Limited), thinks our report of the meeting of that company (*C. & D.*, August 20, page 352) may convey the impression that his resignation of the position of managing-director was due to the action of the directors, and not of his own free will. Mr. Griffiths states that in March last, the directors, wishing to show their appreciation of his services as general manager, made him a director, and afterwards managing-director, with Mr. Gough as general manager. This post, Mr. Griffiths says, he accepted on condition that his duties should be of a much lighter character than those of general manager. In May, however, Mr. Griffiths resigned his positions as managing-director and director, finding that the duties were increasing rather than diminishing. The Board pressed him to remain a director, but he persisted in his resignation.

WE mentioned a fortnight ago that Mr. Pocock, the President of the Pharmacy Board of Cape Colony and also of the Cape Pharmaceutical Society, had come to England with his family with a view of settling here. Mr. Pocock has opened his account with English country life with a gruesome experience. A coloured nursemaid, named Clara Buchanan, had accompanied the family to England, she threatening to commit suicide if left behind. The family had settled at Bedford, and as the girl was subject to epileptic fits, and frequently displayed symptoms of mental aberration, she was told another nurse must be engaged, and that she would be found light household duties. This seemed to prey on her mind, and when last Friday night she was reprimanded by her mistress she proceeded to the Midland Railway, just outside the town, and stepping from behind a signal-box she laid herself in front of an express train which, remarkable to relate, passed over her without apparently hurting her. Another express train was coming in the opposite direction, and before anyone could interfere she placed herself in front of the engine and was cut completely in two. Her skull was also fractured, death being instantaneous. At the inquest held on Monday a verdict of suicide whilst temporarily insane was returned.



SINCE our last Educational Number few changes have been made in the curricula of the professions which are dealt with herein. To pharmacists the most notable fact is that the Pharmaceutical Society of Great Britain has obtained legislative indorsement to its proposal to make those who pass the Minor examination eligible for membership of the Society, thus doing away with one of the incentives for proceeding to the Major examination. The Pharmaceutical Society of Ireland, by a readjustment of marks, &c., has rather improved its Preliminary examination. No accomplished changes are noticeable in medicine, the General Medical Council not yet having completed that consideration of the examination in general education which is expected to narrow the entrance to the medical and allied professions. The need for a more comprehensive qualification for those practising as chemical analysts, especially in the analysis of food and drugs, has induced the Institute of Chemistry to

devise an extension of its examinations which requires some pharmaceutical and therapeutic knowledge.

In the succeeding pages we have endeavoured to give succinct information in the five departments of knowledge included, telling the conditions under which statutory qualifications or diplomas are granted; giving particulars of the examinations, and adding information respecting the courses of study and the educational institutions wherein students are prepared for examinations. We wish to impress upon those who use this article that the quickest and best plan to acquire further information on any point is to consult the calendar, schedule, or prospectus of the examining body or school in which they are interested; or to write to the Secretaries or Deans, expressing themselves clearly in questions, and enclosing stamp-addressed envelope for reply. We give addresses in all cases.

Pharmacy.

RETAIL pharmacy, and to a certain extent the wholesale drug-trade, in the British Isles is controlled by Acts of Parliament, of which four, called Pharmacy Acts, apply to Great Britain and two to Ireland, while Guernsey and Jersey have regulations substantially akin to the statutory conditions in Great Britain. There are no restrictions in the rest of the Channel Islands, nor in the Isle of Man. Substantially, the Pharmacy Acts require that certain scheduled poisons shall not be sold by retail except by registered persons, and the titles of such registered persons may not be used by those who are not registered, limited companies being exempted, except in regard to labelling and other conditions for selling poisons. We first deal with

GREAT BRITAIN.

The Pharmaceutical Society of Great Britain was established in 1841 for the purpose of advancing chemistry and pharmacy and promoting a uniform system of education of those who practise the same. It was, and is, a voluntary association, and the examinations then instituted were not compulsory until January 1, 1869. The examination for assistants—*i.e.*, the Minor examination—became the qualification for those who desired to be registered as above mentioned. The Pharmacy Act, which the Pharmaceutical Society obtained in 1852, protected the title pharmaceutical chemist and its equivalents, and persons who were then connected with the Society as members were entitled to have their names placed on the register; others had to submit to examination, to show that they were competent persons. In 1868, when the need of regulating the sale of poisons was recognised, and the Legislature passed the Pharmacy Act, 1868, the Pharmaceutical Society was entrusted with the duties of registering and examining future

chemists and druggists. All then in business as such on their own account were registered, assistants were admitted to a modified examination, and the examiners of the Pharmaceutical Society were empowered to examine all other persons who desired to get "a Certificate of Competent Skill and Knowledge and Qualification" for registration as a chemist and druggist. As already stated, the examination was that known, until 1868, as the Assistants' examination. The Act puts it, "Such as is provided under the Pharmacy Act for the Purposes of a Qualification to be registered as Assistant under that Act," and this has always been taken to mean that the candidate must pass (as before the 1868 Act) two examinations—*viz.*, the Preliminary and the Minor.

THE "FIRST" EXAMINATION,

formerly known as the "Preliminary," is in the following subjects:—

Latin.—Grammar; translation of simple sentences from English into Latin; translation into English from Caesar, "De Bello Gallico," Book I., or Virgil, "Æneid," Book I. In each examination-paper passages from both of these authors will be given, but a candidate is required to translate from one author only.

Arithmetic.—Numeration; the first four rules—simple and compound; reduction; vulgar and decimal fractions; simple and compound proportion; a thorough knowledge of the British and metrical systems of weights and measures; percentages and stocks. In each examination-paper a question will be given involving a knowledge of the metrical system, which every candidate will be required to attempt.

English.—Grammar and composition. In awarding marks, spelling and the quality of the handwriting are taken into account.

The centres at which the examinations are held are these :—

Aberdeen	Darlington	Jersey (<i>in July only</i>)	Northampt'n
Birmingham	Douglas, Isle of	Kirkwall, Orkney	Norwich
Brighton	Man (<i>July only</i>)	(<i>July only</i>)	Nottingham
Bristol	Dundee	Lancaster	Oxford
Cambridge	Edinburgh	Leeds	Penzance
Canterbury	Exeter	Lincoln	Peterboro'
Cardiff	Glasgow	Liverpool	Plymouth
Carlisle	Guernsey (<i>in July only</i>)	London	Sheffield
Carmarthen	Hull	Manchester	Shrewsbury
Carnarvon	Inverness	Newcastle	Southampt'n
Cheltenham		York	

The examination is held on the second Tuesdays of January, April, July, and October, the next four being October 11, 1898, January 10, 1899, April 11, 1899, and July 11, 1899. The examination is in writing, and takes place from 11 A.M. till 4.30 P.M., with an interval from 2 to 3 P.M. The fee is 2*l.* 2*s.*, and must be paid to the Registrar, Mr. Richard Brembridge, 16 Bloomsbury Square, London, W.C., not less than fourteen days before the examination is held. Printed forms of application are required; these are obtainable from the Registrar.

In case of failure to pass the candidate may attend on any future occasion, after giving the requisite notice, on paying a fee of 1*l.* 1*s.* In case of failure to attend, through illness or other unavoidable cause, the candidate pays a fine of 1*s.* It is the College of Preceptors who set the questions, examine the answers, and decide the results. The Board of Examiners for England and Wales formally pass the report of the College. Passing this examination entitles to registration as apprentices or students. The most useful book for students preparing for this examination is Dodd's "Guide to the Preliminary Examination" (*C. & D. office, 2*s.*, by post 2*s.* 3*d.*), which contains much useful advice on each of the subjects required, as well as an analysis of several years' papers. This examination is to be abolished after August, 1900, when certificates of recognised examining bodies, previously approved, will only be required. At present the Boards of Examiners are empowered to accept certificates from certain examining bodies, and a person producing any of the undermentioned certificates is exempted from passing the "First" examination :—*

Degrees in arts, matriculation, or entrance examinations of the Universities of Oxford, Cambridge, Durham, London, Edinburgh, Aberdeen, Glasgow, St. Andrews, Dublin, Wales, Cape of Good Hope and Victoria University, Royal University of Ireland, Queen's University in Ireland; the Preliminary examination certificates of the Royal College of Surgeons of England, Royal Colleges of Physicians and Surgeons of Edinburgh, Faculty of Physicians and Surgeons of Glasgow, Royal Colleges of Physicians and Surgeons in Ireland, Apothecaries' Hall of Ireland, and Incorporated Law Society; also certificates of the Oxford and Cambridge Schools' Examination Board, Intermediate Education Board for Ireland, Owens College, and Scotch Education Department—the latter under certain conditions. The Boards have power to accept any other certificates fulfilling the conditions laid down.

It is well to note that the certificates must include English, Latin, and arithmetic, and they must show that the holder passed the examination in these subjects at one time. The fee of 2*l.* 2*s.* must be paid.

After August, 1900, the certificates required must show that the holders have passed an examination in English grammar and composition, the Latin language, one modern foreign language, and algebra, arithmetic, and Euclid. Although two years have yet to elapse before this new regulation comes into force, that time is by no means too much, for those who are now in the trade and wish to qualify, to get through. We may here also remark that although no time for passing the examination is stipulated, it is extremely advisable to get through it before apprenticeship, or within a year after entering the trade.

STUDY FOR THE MINOR.

The period between entering business and going in for the Minor is generally wasted. The average young man, just free from the restraints of school discipline, prefers spending his leisure in non-professional pursuits to studying the subjects required for the Minor examination. It is true that in many cases this leisure is but scanty, and many masters

omit to provide time for study and exercise. Both are necessary for the growing man. It is, however, beyond argument that masters should take, not only an interest in the studies of the apprentices whom they have covenanted to train, but allow a sufficient time for exercise. The following is an apprentice's time-table used in a good middle-class pharmacy in England :—

8 A.M., breakfast.	3 till 5 spent in pharmacy.
8.30 A.M., pharmacy opens.	5 to 5.30, tea.
8.30 till 10., dusting.	5.30 till 7.30 spent in pharmacy or laboratory.
10 till 11.15, exercise.	Free at 7.30.
11.15 till 1.15 spent in laboratory.	Half-holiday from 1 o'clock, Wednesdays.
1.15 till 2, dinner.	
2 till 3, private study.	

With the leisure allowed here a young man will be enabled to lay down a solid foundation of knowledge at just that time of life when he is best able to assimilate it. It must in these days be a very small and insignificant town which does not present opportunities of study in technical schools affiliated with South Kensington. Such classes are held usually only during the winter months, but they form one of the most useful means by which a pharmaceutical student can learn the rudiments of science. The regularity with which the classes come round week by week, and the friendly rivalry they engender, all tend to keep the student to his work, and to give him a more intelligent grasp of the subjects than the Minor schedule engenders. Practice in chemistry is very desirable. The cost of the few necessary chemicals and apparatus is but trifling compared with the experience gained. Therefore it is a decided advantage for the Minor student to fit up a little laboratory of his own and in his own way. A student needs few chemicals beyond what are usually found in a chemist's shop. Then, as to bottles, most chemists have a barrowful or so of odd bottles which, by reason of shape, &c., are not usable in the ordinary course of business. A set of bottles can be made up from these without cost. Test-tubes, a piece of platinum wire, a porcelain capsule, and some thin-glass tubing are the main apparatus required. In Atfield's "Chemistry," Clowes and Coleman's "Qualitative Analysis," and other text-books particulars will be found of the chemicals and apparatus required, but to save all trouble, and to be sure that they have what they need, students would do well to get one of Messrs. Southall Brothers & Barclay's sets.

In speaking of the facilities afforded by masters to their apprentices for study, it should be borne in mind that there are young men who take no interest in getting forward with their studies. These form the class who in later years, after a course at a school, have a "shot" at the Minor and generally fail, then have a few more "shots," and giving up hopes of passing, drift off into callings not requiring any real technical knowledge, or qualify in pharmacy by "limited liability." This emphasises the importance of passing or trying to pass, the Preliminary examination before entering the trade. The very fact that the way is clear on entering the trade is frequently an incentive to technical studies. We have already mentioned the

EVENING SCIENCE CLASSES

which are held throughout the country in connection with the Committee of Education, South Kensington. It would be difficult to overrate the good which these classes have done to pharmaceutical students who have used them in an intelligent manner. A correspondent (256/57), who has had recent personal experience of these classes, writes as follows :—

The only drawback that can be urged against the South Kensington classes is that chemists' assistants and apprentices have not the necessary spare time to attend them, but, judging from a few cases that have come under my notice, a little personal effort would often remove any such obstacle. These classes are, to pharmaceutical students, the best means for obtaining a thorough knowledge of the science-work of the Minor syllabus, and I would strongly urge all those who have any opportunity whatever to attend one or more of them at the earliest moment. I wish to indicate what, in my opinion, is the most suitable way for covering the whole of the science-work of the Minor syllabus.

Chemistry, owing to the extended knowledge now required, necessitates a systematic course, which should include classes in

practical and theoretical, inorganic, and organic chemistry. This, apparently, is a big order, but by a judicious arrangement, covering a period of two or three sessions, this subject may be satisfactorily and thoroughly studied. I would suggest the following subjects for—

- (a) *Theoretical Chemistry*.—The elementary stages of inorganic and organic, and the advanced stage of inorganic, chemistry. These subjects will more than cover the theory required from a Minor candidate.
- (b) *Practical Chemistry*.—The stages corresponding to theoretical. Volumetric analysis is not taken so fully in these classes as in the Minor, but a little additional work—say at a pharmaceutical college—is only necessary to make one quite proficient, otherwise the work is admirably suited.
- (c) *Botany*.—The elementary stage is almost sufficient, but those who can spare the requisite time would be well repaid by taking the advanced stage the next session.

These show what I consider the most suitable classes to take up but the student must make his own plan. Undoubtedly the best one is to arrange the classes in such a way as to cover the whole of the work during three winters.

In illustration of the quality of work done in connection with these classes, I quote the questions given at the last examination in advanced theoretical inorganic chemistry:—

If you were provided with hydrochloric acid, manganese dioxide, and chalk, how many substances could you prepare? Write the formula of each, and show by an equation how it is formed. (30)

Write the formulae of the following minerals: iron pyrites, cinnabar, selenite, Iceland spar, galena, felspar, olivine, carnalite. By what treatment could you prepare pure silica from any of these substances? (26)

State the "Law of Avogadro," and the facts upon which this hypothesis is based. Define the word *molecule* as used in connection with the law. (26)

Describe the action of water under different conditions upon the several chlorides of phosphorus, arsenic, antimony, and bismuth. (26)

What are the chief natural sources of boron? Write the formula and describe the chief properties of its oxide, and state how you would prepare a specimen of this oxide. (20)

A white substance held in the Bunsen flame imparts to it a green tinge. Name the elements whose compounds behave in this way, and state how you would distinguish between them. (22)

How would you prepare chlorine and oxygen respectively from bleaching-powder? Explain by equations in each case. (24)

A metallic oxide when moistened with water becomes hot, and on the addition of more water furnishes a strongly alkaline solution which gives a copious white precipitate with carbon dioxide. This precipitate is not appreciably affected by heating it to redness. What is this oxide, and what changes has it undergone in these experiments? (22)

By what experiment would you prove that hydrogen chloride contains half its volume of hydrogen? (20)

A sample of bromine is known to contain a small quantity of chlorine; how would you purify it? (16)

How would you prove that lime contains oxygen? (20)

Give exact instructions for preparing upon a small scale any two of the following compounds: pure sodium chloride (from common salt), crystallised ferrous ammonium sulphate, solution of ammonium hydrogen sulphide, crystallised microcosmic salt (sodium ammonium hydrogen phosphate). (24)

The candidate is required to answer eight questions only, and he has three hours to do it in. The maximum number of marks obtainable is added in parenthesis to each question. I now appeal particularly to Minor students, but to those who have passed the Minor, and are anticipating the Major, I can equally recommend these classes as an invaluable aid to their studies. For their purpose it is necessary to take up the more advanced classes in chemistry and botany, and, in connection with some centres, classes are held at which the physics subjects of the Major syllabus are taught.

In most centres, we may add, courses of lectures on "magnetism and electricity" and "sound, light, and heat" are given. The latter course should certainly be taken by Minor students, as it helps greatly to facilitate understanding of those laws of motion which play so great a part in modern chemical theory, and the appreciation of which at the outset of chemical studies is essential to understanding.

Besides class-studies, or in the absence of such, the Minor student should do a lot of reading between his 17th and 20th years. What this may be depends upon circumstances. We think it a good plan, first of all, for the apprentice to get a general knowledge of drugs and their uses, and the text-book for that varies with the locality. On the whole, Squire's "Companion to the British Pharma-

copoeia" is the best book for pharmaceutical students. Apprentices should read the large type at least, especially noting Medicinal Properties, Preparations, Strengths, and Doses. At the rate of two pages per day (excluding Sundays and holidays) one gets through "Squire" comfortably in a year, and if questions are asked once weekly by employers or friends, they incite to progress. Scoresby-Jackson's "Materia Medica" is a fair substitute, and Whitt's "Materia Medica and Pharmacy" is even better.

After "Squire" has been gone over once the student should get "The Art of Dispensing" and see how compounding of medicines is done. He should keep his Latin fresh by means of Ince's "Latin Grammar of Pharmacy," and familiarise himself with the sources of drugs, botanical forms, &c. If science-classes and university colleges are not in the student's circle he should read elementary works on chemistry, botany, and physics; in short, make every attempt he can to obtain that education which is the basis of pharmacy. The Pharmaceutical Society and all competent pharmacists consider that three years should elapse between the passing of the Preliminary and the Minor examinations, although actually an interval of three months only need elapse between the two. A glance at

THE SUBJECTS OF THE MINOR EXAMINATION

will show that three years are not a day too much to acquire the knowledge. The following is a reprint of the official schedule:—

Chemistry and Physics.

The candidate will be expected to possess an *elementary* knowledge of the following subjects:—

(a) The law of the conservation of energy; the law of gravitation; the balance; specific gravity; atmospheric pressure; the barometer, air-pump, and syphon; the law of Boyle; temperature; thermometer; the law of Charles; the law of gaseous diffusion; V. Meyer's method for determining vapour densities.

(b) The chief characteristics of chemical action, the distinction of elements and compound; the laws of chemical combination by weight and volume; the hypothesis of Avogadro; atomic weight and molecular weight; chemical formulae and nomenclature; valency; the distinction between metals and non-metals.

(c) The general characters of the non-metals; the chief methods of preparation and the typical reactions of the following non-metallic elements and compounds:—Hydrogen, oxygen, ozone, water, peroxide of hydrogen; chlorine, bromine and iodine, and their compounds with hydrogen and oxygen; fluorine, hydrofluoric acid; nitrogen, ammonia, the oxides of nitrogen, nitrous acid, nitric acid; sulphur, sulphuretted hydrogen, sulphurous and sulphuric anhydrides and acids, thiosulphuric acid; phosphorus, phosphine, the oxides and oxy-acids of phosphorus, the chlorides of phosphorus; silicon, silica, fluoride of silicon, silicofluoric acid; boron, boric acid. The usual impurities in those of the above-named substances that are included in the British Pharmacopoeia.

(d) The general characters and classification of the metals, and the general methods of forming oxides and salts; the sources, the usual methods of extracting, and the chief properties of the undermentioned metals, and the principal modes of preparation, properties, adulterations, and contaminations of such of their compounds as are described in the British Pharmacopoeia:—Potassium, sodium, ammonium, lithium, barium, calcium, magnesium, zinc, aluminium, iron, chromium, manganese, arsenium, antimony, tin, copper, bismuth, lead, silver, mercury, gold, and platinum.

(e) Carbon, its oxides, cyanogen, hydrocyanic acid, cyanide of potassium, ferrocyanide and ferricyanide of potassium, oxalic acid. The chief methods of preparing marsh-gas, ethylene, alcohol, aldehyde, acetic acid, acetate of ethyl, spirit of nitrous ether, nitrite of amyl, hydrate of chloral, chloroform, iodoform, ether; the principal properties, reactions, and mutual relations of these compounds. The candidate will also be expected to possess a general knowledge of the methods of estimating carbon, hydrogen, oxygen, and nitrogen in organic compounds, and of obtaining molecular formulae.

Note.—Candidates will be expected to solve simple problems relating to the weight and volume, under different conditions of temperature and pressure, of elements and compounds concerned in chemical reactions.

Practical Examination.

To determine the specific gravity of liquids and solids, to be familiar with the general construction and use of the thermometer and barometer.

To recognise by chemical tests the more important non-metallic elements and compounds, as well as the metals and salts indicated in the foregoing list; to detect the chief impurities in

those that are included in the British Pharmacopœia; to recognise by their physical properties those which possess well-defined characteristics.

To identify by chemical tests the organic compounds before enumerated, and, in addition, tartaric and citric acids, starch, cane-sugar, grape-sugar, salicin, quinine, morphine, and strychnine; and to detect the impurities in such as are included in the British Pharmacopœia.

To perform those volumetric determinations which are described in the British Pharmacopœia.

To be familiar with the construction and use of the balance, and to have a practical knowledge of the British and metric systems of weights and measures.

To quantitatively determine the total alkaloids in cinchona-bark, and in the tincture and extract of nux vomica, and the morphine in opium.

The candidate will further be expected to have a practical acquaintance with the methods of preparing the more important inorganic substances, including the non-metals and their compounds, and such metallic compounds as are included in the British Pharmacopœia, and also the following organic compounds:—Ether, chloroform, spirit of nitrous ether, nitrite of amyl, acetate of ethyl, and hydrocyanic acid, so that he may be able to explain to the examiner the operations involved in their preparation, and, if called upon, to perform the operations or certain stages of them himself.

Botany.

The candidate will be required to recognise any of the plants specified in the list appended to this schedule; to refer any flowers that may be shown to him to their class and sub-class; to possess a general knowledge of the internal structure of stems, leaves, and roots, and their parts, and of the elementary tissues of which they are composed; to describe a cell, its structure, and usual contents; to explain the thickening of cell-walls, and to describe the manner in which cells are combined to form tissues. To distinguish between roots and stems, and to name such important modifications of either as present distinguishing characteristics. To name correctly such leaf-shapes as are shown, and to recognise appendages or any important modifications of the leaf. To have a practical knowledge of the various arrangements of leaves or flowers in the bud, and of the different kinds of phyllotaxis and of inflorescence; to understand the principles of branching, and the different kinds of branch systems. To possess a general knowledge of the processes of reproduction of plants, and to describe those of phanerogams and ferns. To name and describe the arrangements of the parts of the flower, the number, position, and shape of the floral envelopes, and of the organs of reproduction; to name and describe the different kinds of fruits, and the various modes of dehiscence and kinds of placentation. To have a general knowledge of the physiology of plants, and to describe the functions of the roots, stems, and leaves. To be acquainted with the materials which form the food of plants, and to understand the part played by starch, sugar, and aleurone grains in the life of the plant. To recognise, by means of the microscope, sections of stems of dicotyledonous, monocotyledonous, and cryptogamic plants; spiral, reticulated, and scalariform vessels; as well as the simpler structures, such as stomata, pollen grains, and hairs.

List of Plants for Recognition.

Aconitum Napellus, Papaver Rhœas, P. somniferum, Brassica alba, Cochlearia Armoracia, Althœa officinalis, Ruta graveolens, Cytisus Scoparius, Rosa canina, Bryonia dioica, Æthusa Cynapium, Conium maculatum, Foeniculum capillaceum, Cenanthe crocata, Valeriana officinalis, Achillea Millefolium, Anthemis nobilis, Matricaria Chamomilla, Taraxacum officinale, Menyanthes trifoliata, Borago officinalis, Atropa Belladonna, Datura Stramonium, Hyoscyamus niger, Solanum Dulcamara, Digitalis purpurea, Lavandula vera, Mentha piperita, M. viridis, M. Pulegium, Rosmarinus officinalis, Daphne Laureola, D. Mezereum, Juniperus Sabina, Taxus baccata, Colchicum autumnale, Arum maculatum, Avena sativa, Hordeum vulgare, Triticum sativum, Aspidium Filix-mas.

Materia Medica.

The candidate is required to recognise specimens of any crude drug mentioned in the British Pharmacopœia or in the annexed list, and to describe their methods of production and their characteristics so far as may be necessary to detect adulteration or substitution. He must be familiar with their geographical sources, the botanical and zoological names of the plants and animals yielding them, the natural orders to which they belong, and the localities from which they are obtained. The candidate will be required to name their chief active constituents and also the official preparations into which they enter.

Roots.—Althœa officinalis, Inula Helenium, Alkanna tinctoria, Bryonia alba et dioica.

Rhizomes, &c.—Helleborus niger, Sanguinaria canadensis, Iris florentina, Allium sativum, Veratrum album, Acorus Calamus, Agropyron (Triticum) repens.

Barks.—Berberis vulgaris, Cinnamodendron corticosum, Simaruba amara, Erythrophloeum guineense, Quillaia Saponaria, Prunus serotina, Ulmus campestris, U. fulva, Cinnamomum Cassia, Coto.

Herbs.—Grindelia squarrosa et robusta, Tussilago Farfara, Spigelia marilandica, Marrubium vulgare, Solanum Dulcamara, Euphorbia pilulifera, Convallaria majalis.

Flowers.—Calendula officinalis, Pyrethrum cinerariaefolium, &c., Arnica montana.

Fruits.—Punica Granatum, Cuminum Cuminum, Capsicum annuum, Laurus nobilis, Piper longum, Vanilla planifolia.

Seeds.—Paullinia sorbilis (Guarana), Trigonella Fœnugræcum, Dipteryx odorata, Pyrus Cydonia, Strychnos amara, Hyoscyamus niger, Amomum Melegueta, Arca Catechu.

Hairs.—Mucuna pruriens.

Juices, &c.—Acacia Catechu, Lactusa virosa (Lactucarium), Aloe spicata, &c., Curare (Woorari).

Gum-Resins.—Eoswellia Carterii, &c., Euphorbia resinifera.

Oleo-resins.—Pistacia Terebinthus.

Resins.—Callitris quadrivalvis, Pinites succinifer, Calamus Draco.

Cryptogamic Substances.—Lycopodium clavatum, &c., Fucus vesiculosus, Chondrus crispus.

Animal Substances.—Spongia officinalis, Coccus Lacca, Mylæbris Cichorii, Sepia officinalis, Castor Fiber.

Prescriptions.

The candidate is required to read, without abbreviation, auto-graph prescriptions; to translate them into English; to understand the grammatical construction of the Latin; and to render a literal, as well as an appropriate translation of the directions for use. To detect errors, discover unusual doses, and have a general knowledge of posology. To calculate percentages and other quantities occurring in prescriptions; also to render in good Latin ordinary prescriptions written in English.

Practical Dispensing.

To weigh, measure, and compound medicines; write the directions in concise language in a neat and distinct hand; to finish and properly direct each package. [In awarding marks in this subject, the time taken by the candidate in doing the work is taken into account.]

Pharmacy.

The candidate will be required to possess a general knowledge of the following branches:—

(a) Operations requiring the use of heat. Evaporation, with particular reference to the preparation of extracts and inspissated juices; special characters and modes of preparing the various classes of extracts; influence of surface, temperature, and pressure upon the rate of evaporation; water, steam, and sand baths; distillation, ordinary, fractional, and destructive, distinctive characters and objects of each; official preparations illustrating the various kinds of distillation, apparatus employed, the retort and receiver, still and worm, Liebig's condenser, principles on which they are constructed and used. Sublimation: its objects and applications in pharmacy; official products of sublimation, calcination, and fusion. Desiccation; temperature best suited for drying particular drugs, loss in drying vegetable drugs, forms of drying-ovens, principles on which they are constructed and used.

(b) Disintegration of solid substances; cutting, bruising, and pulverisation; apparatus employed, principles indicating which is to be adopted in particular instances; methods for controlling the degree of comminution, sieves and sifting, trituration, levigation, elutriation, granulation, including methods for producing certain chemicals as fine powders, small crystals, scales, &c. Solution: its nature, solvent power of various menstrua, influences of (a) temperature; (b) state of division of the substance to be dissolved; (c) time; (d) position of the substance in the menstruum; lixiviation, infusion, digestion, and decoction; maceration, percolation, and displacement, principles on which the successful performance of these processes depends; form and materials for percolators and other vessels employed. Filtration, objects and methods, filtering media, means of expediting filtration; dialysis: its application in pharmacy, construction and use of the dialyser. Expression: methods of obtaining the juices from plants; recovery of the residual liquids from tincture-mares, &c.; screw, hydraulic, and other presses. The principles involved in the dispensing of medicines, particularly with reference to the best excipients and methods for forming pill-masses, the preparation and nature of emulsions, the most suitable emulsifying agents, and the best means of suspending insoluble substances in liquids.

(γ) The candidate will also be required to show a practical knowledge of the processes, and understand the principles of the processes, by which the official preparations belonging to the following classes are made, viz.:—Colloids, confections, decoctions, dilute acids, extracts (solid and liquid), glycerins, infusions, juices, liniments, lotions, mixtures, ointments, pill-masses, plasters, powders (simple and compound), solutions, spirits,

suppositories, syrups, tinctures, vinegars, waters, and wines. He must be able to conduct such of the operations, or parts of them, as may be required by the examiner. A knowledge of the proportion of active ingredients or crude material in official preparations containing aconite, antimony, arsenic, belladonna, Calabar bean, cantharides, hydrate of chloral, chloroform, caustic potash and soda, colchicum, digitalis, elaterium, ergot, iodine, iodoform, ipecacuanha, lead, mercury, nux vomica, opium, phosphorus, scammony, stramonium, squill, alkaloids, and alkaloidal salts.

Poisons.

Candidates will be required to enumerate the poisons contained in Schedule A of the Pharmacy Act, 1868, and those since added thereto, in pursuance of the provision contained in section 2 of that Act, viz.:—

- (a) Poisons within Part I. of the schedule.
- (b) Poisons within Part II. of the schedule.

They will be required to describe minutely the conditions required upon the sale *by retail* of poisons, both in Part I. and Part II. of Schedule A.; and to write the proper entry required, according to Schedule F of the Act, for the sale of a poison coming within Part I. of Schedule A. They will also be required to state the conditions imposed on the sale of scheduled poisons *by wholesale and for export*; and upon the sale of a scheduled poison when forming an ingredient in a medicine dispensed.

A knowledge of the conditions imposed on the sale of arsenic by the Arsenic Act will also be required.

Note.—Candidates must not take into the examination-rooms or laboratories any books or any notes or memoranda, whether written or in print.

We may add that at a Council meeting of the Pharmaceutical Society in May it was announced by the President that, whilst it was desirable that students should make themselves acquainted with the changes in the British Pharmacopoeia, 1898, their knowledge would not be tested before the January examination, 1899.

CONDITIONS OF ENTRY.

Men or women who have attained full age (21 years) may enter for this examination under the following conditions, viz.:—

That they have been registered as apprentices or students before making application.

That they have been engaged in translating and dispensing prescriptions for three years.

That they produce a registrar's certificate of birth. (The 21 years must be completed at the time of giving notice to attend the examination).

That they pay a fee of 5*l.* 5*s.*, and make application on the printed forms obtainable from the Registrar (Mr. Bremridge, 16 Bloomsbury Square, London, W.C.) on or before the fifteenth day of the month immediately preceding that in which the examination is held.

The examination is conducted in Edinburgh (36 York Place) by the Board of Examiners for Scotland, and in London (Galen Place) by the Board of Examiners for England and Wales, in the months of January, April, July, and October, but the examinations really begin in the months previous, when the candidates are called in rotation to do Practical Chemistry and Practical Pharmacy and Dispensing, one or other of these being taken in the forenoon (3 hours), and the other in the afternoon. If a candidate fail in either of these subjects he is not permitted to proceed to the oral examination; but if he pass the practical he is called up for the oral in the first or second week of the prescribed month. The fee for re-examination is 3*l.* 3*s.*, and candidates may go in as often as they like at 3*l.* 3*s.* a time. After August, 1900, the initial fee will be 10*l.* 10*s.*, and for re-examination 3*l.* 3*s.* A good account of the examination will be found in THE CHEMIST AND DRUGGIST, April 16, 1898, page 643.

On passing the Minor the title "Chemist and Druggist" is conferred, and the candidate's name and address are entered in the register of chemists and druggists. Any change of address should be communicated to the Registrar.

THE MAJOR EXAMINATION

is the examination which was first instituted by the Pharmacy Act, 1852, and continued under the Act of 1868. Those who pass it are entitled "Pharmaceutical Chemists."

The Juries Act, 1862, exempts pharmaceutical chemists in England and Wales (but not in Scotland), actually in business as such, from service on all juries and inquests. The fee for this examination is three guineas, and for re-examination two guineas. The examination is optional, and is open only to those who have passed the First and Minor examinations. It is held quarterly. Candidates devote two days to writing answers to questions in the undermentioned subjects, and if they pass this they proceed to the practical examination. The following is an abstract of the official schedule:—

CHEMISTRY AND PHYSICS.—The candidates are expected to know the more important facts regarding the physical conditions of matter, and in regard to the sciences of heat, light, magnetism, and electricity. The fundamental principles of chemistry must be learnt, as well as the chemistry of carbon compounds, their constitution, &c., especially cyanogen derivatives, hydrocarbons, paraffin derivatives, and benzene derivatives. Specific substances are named in the schedule. He must also understand the processes of alcoholic, acetic, lactic, and ammoniac fermentation. The properties and decomposition products of the principal glucosides, alkaloids, and other substances of definite chemical composition in the British Pharmacopoeia. In the Practical examination the candidate is expected to be able to analyse mixtures containing three metallic salts; to estimate the nitrogen in organic compounds by the soda-lime process; to determine melting and boiling points; to perform the operations (or certain stages of them) necessary for the preparation of cyanogen, artificial urea, ethyl chloride, iodoform, ethylene, and other similar compounds; to recognise by their chemical reactions, and to determine, where necessary, by the pharmacopoeial gravimetric or volumetric methods, the strength and purity of the most important of the B.P. inorganic and organic compounds; to detect and separate the most important alkaloids, alkaloidal salts and glucosides, and to separate in the pure state morphine from opium and strychnine from nux vomica. Standard works of reference are provided. No other books or memoranda are allowed.

BOTANY.—A thorough knowledge of the physiology of plants is expected, a more complete knowledge of morphology and histology than in the Minor, and practical knowledge of classification, as well as familiarity with the microscope. The last-mentioned subject includes recognition of tissues, cell-contents, &c. The following are the natural orders with which candidates must be familiar:—Ranunculaceæ, Papaveraceæ, Cruciferae, Violaceæ, Malvaceæ, Rutaceæ, Leguminosæ, Rosaceæ, Cucurbitaceæ, Umbelliferae, Dipsacæ, Convolvulaceæ, Gentianaceæ, Solanaceæ, Scrophulariaceæ, Labiate, Polygonaceæ, Euphorbiaceæ, Cupuliferae, Salicaceæ, Betulaceæ, Coniferae, Orchidaceæ, Amaryllidaceæ, Iridaceæ, Liliaceæ, and Gramineæ.

MATERIA MEDICA.—A practical knowledge of the methods of estimating the value of important drugs, of distinguishing commercial varieties of the same, and of separating the official active principles. The candidate is also expected to have a general acquaintance with the active constituents of all important drugs, and of the histological structure of the drugs.

BOOKS FOR STUDENTS.

The following is a list in the subject-order of the syllabus of books which we know to be reliable. Various schools of pharmacy prescribe certain books for their students, and it is always advisable to let the choice of a school and books go together; but we indicate by asterisks books which no student can be wrong in getting:—

Chemistry.

- Attfild's "Chemistry." 15*s.* (Gurney & Jackson.)
- Bernthsen's "Organic Chemistry." 7*s.* 6*d.* (Blackie.)
- Bloxam's "Chemistry." 18*s.* 6*d.* (Churchill.)
- *Clowes and Coleman's "Qualitative and Quantitative Analysis." [Elementary 2*s.* 6*d.*, advanced 8*s.* 6*d.*] (Churchill.)
- Meyer's "Outlines of Theoretical Chemistry." 9*s.* (Longman.)
- Muter's "Analytical Chemistry." 6*s.* 6*d.* (Simpkin.)
- Newth's "Inorganic Chemistry." 6*s.* 6*d.* (Longman.)
- *Perkin and Kipping's "Organic Chemistry." 6*s.* (Chambers.)
- *Ramsay's "Elementary Systematic Chemistry." 4*s.* 6*d.* (Churchill.)

Physics.

- Deschanel's "Physics." 18*s.* (Blackie.)
- *Everett's "Physics." 3*s.* 6*d.* (Blackie.)
- Ganot's "Physics." 15*s.* (Longman.)
- Glazebrook's "Light and Heat." 5*s.* (Cambridge Press.)
- University Tutorial Series, "Electricity and Magnetism." 3*s.* 6*d.* (Clive.)

Botany.

- Bower's "Practical Botany." 3*s.* (Macmillan.)

- *Green's "Botany." Vol. I. Morphology and Anatomy. 7s. 6d.
 Vol. II. Classification and Physiology. 10s. 6d. (Churchill.)
 Scott's "Introduction to Structural Botany." 3s. 6d. (Black.)
 Detmer-Moor's "Plant Physiology." 12s. (Sonnenschein.)
 *Wishart's "Botanist's Vade-Mecum." 2s. (Livingstone.)

Materia Medica.

- Flickiger and Hanbury's "Pharmacographia." 21s. (Macmillan)
 *Southall's "Materia Medica." 7s. 6d. (Southall.)
 Scoresby-Jackson's "Note-book." 12s. 6d. (James Thin.)

Prescriptions.

- *Ince's "Latin Grammar of Pharmacy." 5s. (Baillière.)
 Pereira's "Selecta à Prescriptis." 5s. (Churchill.)

Dispensing.

- ***The Art of Dispensing." 3s. 6d. (C. & D. Office.)

Pharmacy.

- ***British Pharmacopœia, 1898." 10s. 6d. (Spottiswoode.)
 *Gadd's "Synopsis of the B.P." 6d. (Baillière.)
 Coblentz's "Handbook of Pharmacy." 18s. (Blakiston.)
 Lucas's "Practical Pharmacy." 12s. 6d. (Churchill.)
 Remington's "Pharmacy." 21s. (Burroughs, Wellcome & Co.)
 *Squire's "Companion to the British Pharmacopœia." 12s. 6d. (Churchill.)

Poison Laws.

- ***Pharmacy and Poison Laws of the United Kingdom." 2s. 6d. (C. & D. Office.)

Microscope Work.

- Griffith's "Elementary Text-book of the Microscope." 7s. 6d. (Gurney & Jackson.)
 Squire's "Methods and Formulæ." 3s. 6d. (Churchill.)

APOTHECARIES' ASSISTANTS' EXAMINATION.

At one time this was very popular with students preparing for the Minor, as it was thought to be a good guide as to how they were progressing. The qualification has no legal value, but suffices, and is required, for some hospital dispenserships if the applicant does not hold the Minor qualification. The examinations are held on the fourth Wednesdays of January, April, July, and October, at the Apothecaries' Hall, Blackfriars, E.C. The candidates must be 17 years of age before the certificate can be granted. The fee, three guineas, must be paid seven days previous to the examination, and be sent by post, but postal notes are not accepted. In case of failure the fee for re-examination is one guinea. The examination is entirely practical and oral. The practical consists of compounding and dispensing medicines, and is taken in the morning; the oral part, in which chemistry, materia medica, pharmacy, and translation of prescriptions are the subjects, is taken in the afternoon. The Secretary to the Court of Examiners is Mr. Frank Haydon, L.R.C.P., from whom the full syllabus of the examination may be got.

Schools of Pharmacy.

WE leave the selection of a suitable school to the student, as it would be invidious for us to attempt what obviously must vary according to the district in which the student resides, and to some extent on means. Full prospectuses can be obtained by applying to the Secretaries of the several institutions here named. A personal interview will in all cases suffice to settle points in the prospectuses which are not clearly comprehended.

THE SCHOOL OF PHARMACY.

17 Bloomsbury Square, London, W.C.

Staff: BOTANY—Professor J. Reynolds Green, F.R.S.; *Demonstrator*, Mr. E. C. Horrell. CHEMISTRY—Professor J. Norman Collie, F.R.S.; *Assistant lecturer*, Dr. A. Lapworth. MATERIA MEDICA and PHARMACY—Professor Henry G. Greenish; *Demonstrator*, Mr. F. A. Upsher Smith.

The session commences on Monday, October 3, 1898. Two courses of study are given—an elementary and an advanced course. The elementary course includes subjects required for the Minor, and extends to the end of June, 1899. The advanced course extends from October to the end of March. Students may, however, enter the school at any time and for any subject or part of the course, but it is advantageous to enter at the commencement of the course in October. The following is the time-table of the classes with the fees payable:—

Botany.—*Elementary* (October 6 to end of June, 1899), Thursdays and Fridays at 12 o'clock. Laboratory work, Friday mornings at 9.30. Fees, 5l. 5s. *Advanced*, Thursdays and Fridays at 2, from October to December; Thursdays, at 2, from December to March. Laboratory work, Thursday, 9 to 1. Fees, 3l. 3s.

Chemistry (including physics in their relation to chemistry).—*Elementary*, Wednesday and Saturday, 9.30. Physics, Monday, 9.30. Fee, 5l. 5s. *Advanced*, Monday and Tuesday, 12 o'clock. Physics, Wednesday, 2.30; Friday, 9.30. Fee, 3l. 3s.

Practical Chemistry.—The elementary course occupies nine months for students, working three hours daily. Fee, 12l. 12s. The advanced course occupies six months. Fee, 9l. 9s.

Materia Medica.—*Elementary* (October 4 to end of June, 1899), Tuesdays, 9.30. Practical work follows each lecture. Fee, 3l. 3s. *Advanced* (October 5 to end of March, 1899), Wednesdays, 12 o'clock. Practical work precedes the lectures. Fee, 3l. 3s.

Pharmacy (only required for Minor).—October 4 to end of June, 1899. Monday and Tuesday, 2.30. Practical work follows the lectures. Fee, 6l. 6s. The inclusive fee for the Elementary course is 30l.; for the Advanced course, 18l.

The Major course extends from October to March. The Dean of the school is Professor Collie, to whom intending students must apply for information, or to the Secretary of the Pharmaceutical Society.

SOUTH LONDON SCHOOL OF PHARMACY (LIMITED),

325 Kennington Road, London, S.E.

Staff: Dr. John Muter, F.R.S.E.; Mr. J. Thomas, B.Sc.; Mr. W. H. Dodd, F.C.S.; Mr. W. T. Mawer, F.C.S.; Mr. A. H. M. Muter, A.I.C.; and Mr. F. Armstrong.

The session at this school lasts from the end of September until the middle of July. Fresh courses of lectures for Minor and Major begin in September, January, and April. The perpetual fee for the Minor Theoretical and Tutorial classes is 5l. 5s. In the practical department a fee of 3l. 3s. per month is charged. Compounding fees for the Minor are, for the first term, 12l. 12s.; for the second, 8l. 8s. Major students who have passed the Minor from this school are allowed 25 per cent. off the Major fees, which are otherwise the same as for the Minor.

WESTMINSTER COLLEGE OF CHEMISTRY AND PHARMACY,

Trinity Square, Borough, London, S.E.

Principals, Mr. G. S. V. Wills, Ph.C., and Mr. H. Wootton, B.Sc.; Secretary, Mr. E. Walden.

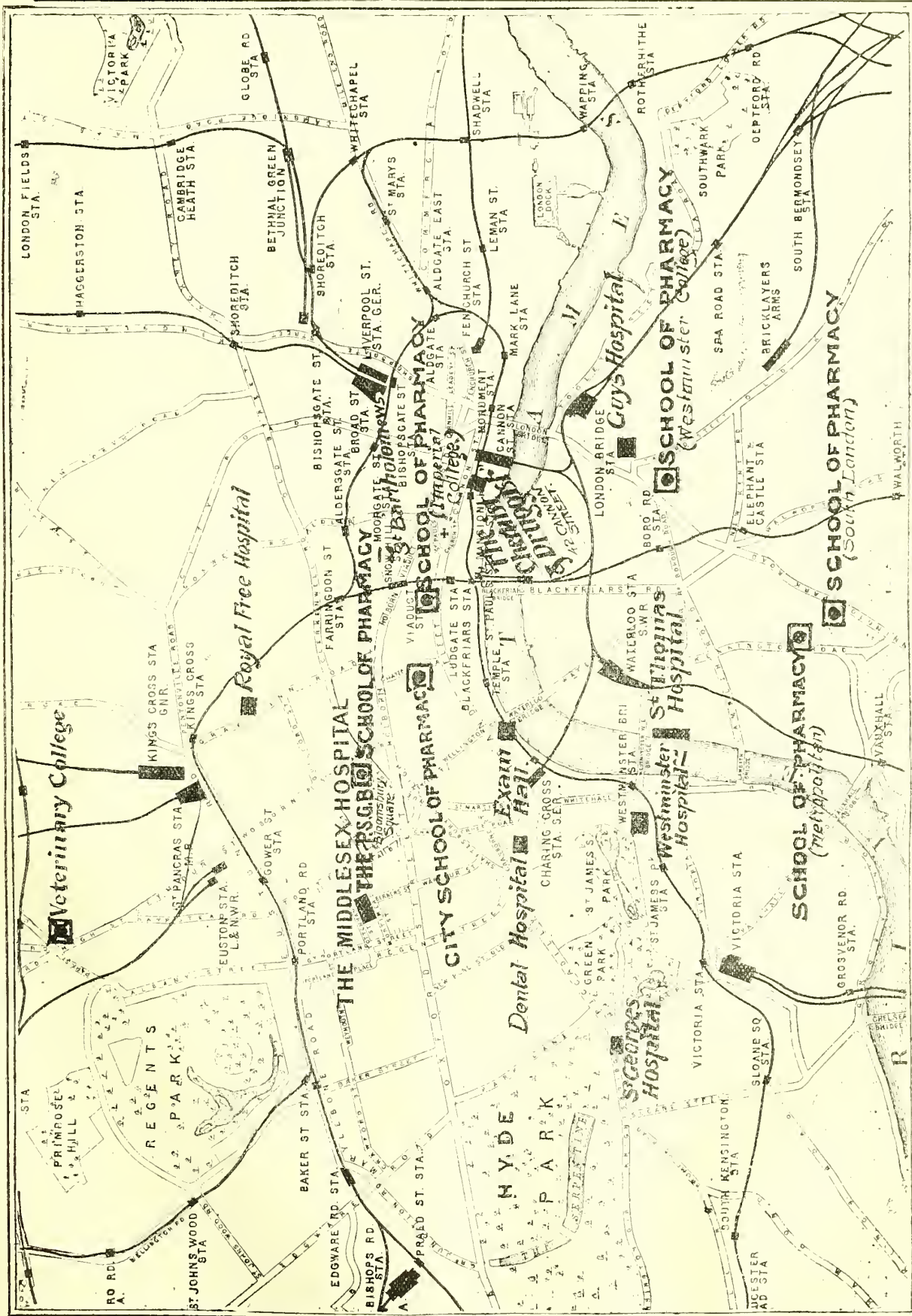
There are during the school year four courses for the Minor, beginning in October, January, April, and August, and three for the Major, beginning in September, January, and April. The fee for a Minor course is 8l. 8s.; two courses, 12l. 12s. Major course, 6l. 6s. Evening lectures and practical work are also given, the fee for a three-month course of each subject being 10s. 6d. Preliminary classes are held daily from 10 to 12, a fee for the course being 3l. 3s. Postal systems are arranged for all examinations.

METROPOLITAN COLLEGE OF PHARMACY,

162 Kennington Park Road, London, S.E.

Principal, Mr. W. Watson Will, F.L.S., F.C.S.; *Demonstrators*, Mr. George T. Branch, Mr. Harry Lucas, and Mr. F. F. De Morgan, F.C.S.; Secretary, Mr. Walter S. Carver.

The sessions are as follow:—Winter, September 1 to December 31; spring, January 1 to April 12; summer, April 12 to July 24. Special tutorial course, September 1 to October 20. The inclusive fees for one Minor session is 10l. 10s.; two, 19l. 19s.; three, 28l. 10s.; for the special tutorial course, 6l. 6s. Students may also enter for half a term or by the week. The fee for the Major session is 6l. 6s. Special tutorial course, 3l. 3s. Evening classes are arranged for the convenience of students who are engaged during the day. The fees for these courses vary according to the length of time they are taken for and the number of hours per week attended.



MAP OF LONDON SHOWING LOCATION OF PRINCIPAL SCHOOLS OF PHARMACY, MEDICINE, &c.

CITY SCHOOL OF CHEMISTRY AND PHARMACY,

27 Chancery Lane, London, E.C.

Principal, Mr. G. E. Skerry, M.A.; Lecturers and Demonstrators, Mr. F. A. Hocking, B.Sc.; Mr. A. Purnell; Mr. Lee, B.A., B.Sc.

The courses for the Minor and Major start in January and July, the fees for the whole course of six months being 12*l.* 12*s.* Single subjects and courses of practical chemistry can be taken. The evening classes are held on Monday, Wednesday, and Friday, from 6 to 10, the fee for the whole course of six months being 7*l.* 7*s.*, smaller fees being charged where the student attends on fewer nights of the week. Correspondence classes on theoretical subjects are also arranged at this school.

IMPERIAL COLLEGE OF CHEMISTRY,

The Laboratory, 51 Imperial Buildings, Ludgate Circus, London, E.C.

Principal, Mr. Frederick Davis, B.Sc.

For the Minor examination students are advised to attend the school for six months, but the work may be covered in three months. The hours of study are from 10 to 5. Evening classes are held on the first four nights of the week from 5.30 till 8 P.M. The fee is ten guineas, and students may enter for single subjects at fees from one guinea upwards.

Brixton School of Chemistry and Pharmacy,

12 Knowle Road, Brixton, London.

Principal, Dr. A. B. Griffiths, F.R.S.E.

Tuition is given in chemistry, botany, materia medica, pharmacy, physics, and prescriptions. Medals are awarded at the end of each full course to the best Minor and Major student. Students may join at any time.

[The map on page 413 indicates the location of the principal schools of pharmacy and principal hospitals in London. This may be of service to provincial students who have friends in London.]

ROBERT GORDON'S COLLEGE, ABERDEEN.

Teacher, Mr. H. E. Ellis, Ph.C.; Clerk, Mr. T. Fotheringham.

The pharmaceutical department of this college embraces courses of study for the Minor and Major examinations. The terms begin in September, January, and April. The fee per term is 7*l.* 7*s.* Evening classes are also held, for which the fee is 3*l.* 3*s.* Single subjects may also be taken.

BARROW-IN-FURNESS.

The Barrow School of Science and Art and Technical Classes are under the control of the Corporation. The classes on chemistry, theoretical and practical, and on electricity and magnetism, are suited for pharmaceutical students.

BIRMINGHAM.

Mr. F. H. ALCOCK, F.I.C., the Analytical Laboratory, Temple Chambers, Broad Street Corner, Birmingham, gives private tuition in all pharmaceutical subjects.

THE CENTRAL SCHOOL OF PHARMACY, 90 New Street—Mr. Stokes Dewson has day and evening classes for the Major, Minor, and Preliminary examinations.

MUNICIPAL TECHNICAL SCHOOL, *Suffolk Street*.—There are special courses of chemistry for the Minor examination. The courses extend over two sessions, and consist in each course of about an hour's lecture, and two hours' practical work from 2.30 to 5.30 P.M. The fee for either lecture course is 2*s.* 6*d.*; for either combined course, 5*s.*

BRADFORD.

The Bradford Technical College has classes in chemistry, botany, materia medica, and pharmacy. A course of pharmaceutical study has been arranged; the first year the subjects taken are organic chemistry, practical chemistry, and botany, the fee for which is 1*l.* The second year subjects are practical chemistry, botany, materia medica, and pharmacy, and the inclusive fee is 30*s.*

CAMBRIDGE.

The Cambridge Pharmaceutical Association, through their Secretary (Mr. E. Saville Peck, 30 Trumpington Street), will furnish particulars of classes in botany and chemistry suitable for pharmaceutical students. The classes are held at the Technical Institute, in connection with the Science and Art Department of South Kensington.

ROYAL DISPENSARY SCHOOL OF PHARMACY,

21 West Richmond Street, Edinburgh.

Principal, Mr. Wm. Duncan, Ph.C, F.C.S., assisted by Demonstrators.

The session, which begins in October and continues till the end of the July examinations, is divided into three terms, commencing in October, January, and April. For Minor and Major students the fee for each course is 8*l.* 8*s.*, and the hours of attendance from 9 A.M. to 5 P.M. Evening classes, covering the same ground as the day classes, are held on Monday, Tuesday, and Thursday at 8.30. The term begins in September. Fee, 3*l.* 3*s.* for a three-months' course.

CENTRAL SCHOOL OF CHEMISTRY AND PHARMACY,

26 Clyde Street, Edinburgh.

Teachers, Messrs. W. B. Cowie, Ph.C., George Senter, Ph.C., A. C. Cameron, and Demonstrators.

Courses of instruction commence in October, January, and April in day classes, and in September in evening classes. There are elementary and senior courses. Fee per quarter for Minor or Major course, 8*l.* 8*s.* (day), 3*l.* 3*s.* (evening), and 1*l.* 1*s.* for "First" course.

GLASGOW SCHOOL OF PHARMACY,

130 West Regent Street, Glasgow.

Principal, Mr. John Lothian, Ph.C.; Demonstrators, Mr. W. Brown and Mr. B. Cockburn; Teachers (Preliminary class), Mr. W. Blythe, M.A., and Mr. A. C. Low.

For the Minor and Major full courses commence October 3, and continue to the end of March. Fee, 8*l.* 8*s.* per quarter. There are also short advanced courses for the July and October examinations, and a course of evening classes (three evenings per week), at a fee for the latter of 3*l.* 3*s.* per quarter.

GLASGOW AND WEST OF SCOTLAND SCHOOL OF PHARMACY,

157 St. Vincent Street Glasgow.

Principals, Mr. T. Mackenzie, Ph.C., and Mr. T. S. Barrie, Ph.C., assisted by Mr. J. Manson and Mr. A. M. Ferguson, M.A.

At this school there are four terms, beginning on October 4, January 11, April 5, and August 17. The day classes for Minor and Major are held from 10 A.M. to 5 P.M., at fees of 8*l.* 3*s.* per quarter. Evening classes for the Major, Minor, and First take place from 8 P.M. to 11 P.M., the fees for which are at the rate of 1*l.* 1*s.* per term for one night per week for Minor and Major. For the First the fee is 10*s.* 6*d.*

LEEDS.

There are evening-courses of study at the Technical School in chemistry during the winter. The classes open on Monday, September 12. The Leeds Chemists' Association occasionally arrange a materia-medica course, and have an excellent cabinet of specimens.

LIVERPOOL SCHOOL OF PHARMACY,

6 Sandon Terrace, Upper Duke Street, Liverpool.

Principal, Mr. R. C. Cowley, Ph.C., assisted by Demonstrators.

The full-time course of study for the Minor begins on September 12 and continues till Christmas. Fee, 10*l.* 10*s.* The January and April courses continue till the April and July examinations; 9*l.* 9*s.* The fee for two full courses, which is recommended by the principal, is 16*l.* 16*s.* The classes begin at 10 in the morning and continue till 5. Major full-time classes are held from 9 to 5 daily, the fee for a full course of three months being 9*l.* 9*s.* There are

also part-time classes for beginners, held on Wednesdays from 3 to 10 P.M., the session beginning in September. Classes are also held on Fridays for the convenience of those who cannot get away from business before 6 P.M., and a class on Tuesdays for advanced students. The part-time classes are much used by chemists' assistants who wish to retain their situations while preparing for examination.

LIVERPOOL UNIVERSITY COLLEGE SCHOOL OF PHARMACY.

Chemistry: Professor J. C. Brown, D.Sc. Physics: Professor Oliver J. Lodge, D.Sc. Botany: Professor R. J. H. Gibson, M.A., &c. Materia Medica: Professor W. Carter, LL.B. Lecturer on Pharmacy: Mr. Prosper H. Marsden, F.C.S.

Courses of study, Junior and Senior, suited for the Minor and Major examinations, are arranged, beginning in October. The composition-fee for each course is 17*l*.

THE OWENS COLLEGE, MANCHESTER.

Pharmaceutical Department.

Principal, Mr. A. Hopkinson, Q.C., M.A., &c. Dean, Professor A. H. Young, M.B., &c. Professors and Lecturers: Physics, Professor A. Schuster, Ph.D., F.R.S.; chemistry, Professor H. B. Dixon, F.R.S., and Professor W. H. Perkin, F.R.S., Dr. Bailey, Dr. Bone, Mr. Hartog, Mr. Jerdan, Mr. Russell, and Dr. Lawrence; pharmaceutical chemistry, pharmacy, and pharmacy law, Mr. Jas. Grier; materia medica, Professor D. J. Leech, M.D., &c., and Mr. Wm. Kirkby; botany, Professor Weiss, B.Sc.

The course for the Minor examination extends over a winter and a summer session, and the course for the Major over one winter session.

The Dean of the school enrolls students for the winter session from September 29 to October 15. A composition-fee of 17*l*. 17*s*. is charged for admission to the college courses for the first year, and a composition-fee of 15*l*. 15*s*. for the second year, or the classes may be paid for separately. An entrance exhibition of 10*l*. will be offered for competition in October to students entering for the full pharmaceutical course (first and second years). The subjects of the examination will be elementary botany and chemistry. Candidates must give notice to the Registrar (Mr. Sydney Chaffers) on or before September 20. A 5*l*. prize is also offered at the end of the summer session 1898-99 for competition among students proceeding to the course for the Major examination. The Manchester Pharmaceutical Scholarship is tenable at this college.

MANCHESTER COLLEGE OF CHEMISTRY AND PHARMACY,

225A and 227A Oxford Street, Manchester.

Director, Mr. Chas. Turner, Ph.C., F.C.S.

The Minor courses of instruction begin either in January or April for the April and July examinations; fee, 9*l*. 9*s*. Also on the second Monday in August to the January examination, fee 11*l*. 11*s*.; and January to July, fee 14*l*. 14*s*. The classes work from 9.30 A.M. to 4.30 P.M., except Saturdays (half-holiday). Practical work is done in the afternoons. On Tuesdays there is a "once-a-week" class from 2 P.M. to 10 P.M., at fees from 3*l*. to 4*l*. 4*s*. The evening classes work on Mondays, Wednesdays, and Fridays, from 8 to 10 P.M., the fees being from 3*l*. to 4*l*. 4*s*. For the Major course similar courses are arranged, the fees being 6*l*. 6*s*. to 7*l*. 7*s*. for the full-time classes, and 2*l*. 10*s*. and 3*l*. 3*s*. for the "once-a-week" and evening classes.

NORTHERN COLLEGE OF PHARMACY,

100 Burlington Street, Manchester.

Principal, Mr. George Clayton, F.C.S., Ph.C., assisted by Mr. F. Lawson, Ph.C.

The day courses for the Minor begin in September, January, and April. For the September-January course the fee is 10*l*. 10*s*.; for the other two, 9*l*. 9*s*. each. Afternoon and evening courses begin in September and January. The fee for the September-December course is 2*l*. 10*s*. Major classes are also held both during the day and in the evening. The system of work at this college is described as the "Tutorial System"; it partakes more of the nature of

class-routine than lecture-work. Compounding-fees for the Minor are, for the first term, 12*l*. 12*s*.; for the second, 8*l*. 8*s*. Major students who have passed the Minor from this school are allowed 25 per cent. off the Major fees, which are otherwise the same as for the Minor.

NORTH OF ENGLAND SCHOOL OF CHEMISTRY AND PHARMACY,

55 Northumberland Street, Newcastle-on-Tyne.

Principal, Mr. Frank R. Dudderidge, Ph.C., assisted by Demonstrators. Visiting Examiner, Mr. G. F. Merson, F.C.S.

There are four distinct sets of Minor classes in operation at this school.

A.—Full-time day class, daily (except Saturday), 9.30 to 5 Fee, 8*l*. 8*s*. per term of twelve weeks.

B.—Evening class, meeting three times a week, from 7.30 to 10 P.M. Fee, 3*l*. 3*s*.

C.—Afternoon class, meeting on Wednesday, 2 to 9.30 P.M. Fee, 3*l*. 3*s*.

D.—Special weekly class for junior assistants and apprentices. Fee, 1*l*. 1*s*. for each subject, or a composition-fee of 3*l*. 3*s*. for all subjects.

Classes are also held for the Major examination, at fees for the day course of 7*l*. 7*s*., evening course 3*l*. 3*s*., and for the First (or Preliminary) examination at a fee of 2*l*. 2*s*. per term.

NOTTINGHAM.

At the University College pharmaceutical students can at all times work in the chemical laboratory, taking a course suitable for preparation for the Minor or Major. Professor F. S. Kipping, F.R.S., is the head of the chemistry department. The arrangements by the local Association for the coming session are as follows:—

PHARMACEUTICAL CHEMISTRY.—A course of twenty experimentally illustrated lectures will be given in the first and second terms, on Monday evenings at 8 P.M., by Professor Kipping, assisted by Mr. R. M. Cavan, B.Sc., F.I.C. Each student is entitled to three hours' laboratory-work per week (which may be extended by arrangement). Fee, 15*s*. per term. All students before joining will be required to give satisfaction that they already possess a thorough grounding in elementary chemistry. The course fulfils the requirements of the syllabus of the Minor examination.

BOTANY.—A course of twenty lectures, in the first and second terms, on Tuesday evenings at 8 P.M., by Professor Carr, M.A., assisted by Mr. E. A. Smith, B.Sc. Fee for the course, 15*s*.

PRACTICAL DISPENSING.—To be arranged for the second term.

A course of lectures on Organic Chemistry will be held in the third term.

A prize fund of the value of 5*l*. per annum, the gift of Messrs. Newball & Mason, of Nottingham, is available for distribution by the Association on the results of the session's work. All students before joining these classes must be associates of the Nottingham and Notts Chemists' Association. The hours are subject to further revision. Particulars of Mr. Alberlin, Hon. Sec., 2 Chapel Bar, Nottingham.

PLYMOUTH.

The Committee of the Plymouth, Stonehouse, Devonport, and District Chemists' Association, acting in conjunction with the Plymouth Technical School, are endeavouring to arrange a three-year course of pharmaceutical classes. The classes will not be formed unless at least eight students offer themselves. The following is the proposed syllabus:—

First Year.—Botany, inorganic chemistry, practical inorganic chemistry, and physics, in evening classes.

Second Year.—Advanced botany, inorganic chemistry, and inorganic practical chemistry, evening or afternoon classes; theoretical pharmacy and Pharmacy Act, special afternoon class.

Third Year.—Dispensing, with prescriptive Latin (afternoon), organic chemistry (afternoon or evening), materia medica (afternoon or evening), and pharmaceutical preparations (afternoon).

Classes are held in materia medica on Mondays at 8.20 suitable for pharmaceutical students. The lecturer is Dr. Wilson. There are also botany and chemistry classes. The school opens on September 17. In summer (May to September) classes in practical botany are held under the leadership of Mr. Reade.

SHEFFIELD COLLEGE OF PHARMACY,
118 Princess Buildings, The Moor, Sheffield.

Principals, Mr. R. B. Greaves, F.C.S., and Mr. J. W. J. Turner, Ph.C.

Day classes are held, commencing at 10 A.M., on the first

Monday in January, April, July, and October. The fees for a full course are:—Minor, 8*l.* 8*s.*; short course, 5*l.*; Major, 7*l.*; short course, 4*l.* Evening classes from 6 to 9 P.M., commencing on September 15. Fee, 1*l.* 10*s.* for the course.

For the local Society's arrangements see "English News."

Ireland.

PHARMACY in Ireland is regulated by the Pharmacy Act (Ireland), 1875, the Amendment Act, 1890, and the Statute Law Revision (No. 2) Act, 1893. The Pharmaceutical Society of Ireland was incorporated by the 1875 Act, and has similar powers in regard to regulating examinations as the Society of Great Britain. The examinations under the 1875 Act confer the title of "pharmaceutical chemist." The 1890 Act instituted the grade of "registered druggist," and provided for the registration of chemists and druggists in business before the passing of the Act.

The following are the regulations for candidates for the qualification of pharmaceutical chemist.

PRELIMINARY EXAMINATION.

LATIN.—To translate into English and parse sentences from a Latin author:—Caesar's "Commentaries," First Book, or Virgil's "Æneid," First Book. Translate an easy English sentence into Latin.

ENGLISH.—English grammar, including orthography and parsing. To write on a subject selected by the Examiner; and to write from dictation.

ARITHMETIC.—The first four rules, simple proportion, vulgar fractions, and decimals. To describe the British weights and measures and the metric system.

ALGEBRA.—As far as simple equations, inclusive.

GEOMETRY.—Including the first book of Euclid.

ELEMENTARY THEORETICAL CHEMISTRY.—Chemical action. Illustrations and examples. Simple and compound substances. Atoms and molecules. Chemical symbols and nomenclature; formulae and equations. General nature of acids, bases and salts. Combustion, structure and properties of flame. Water, proofs of composition; methods of purification. The air, its constitution; reasons for considering it a mixture and not a compound. The chief physical and chemical characters, with methods of preparation of the following elements and compounds:—Hydrogen, oxygen (and ozone), nitrogen, carbon, chlorine, sulphur, nitrous oxide, nitric oxide, nitric acid, ammonia, carbon dioxide, carbon monoxide, marsh gas, olefiant gas, hydrochloric acid, sulphur dioxide, sulphurous acid, sulphuric acid, sulphuretted hydrogen.

The candidate must pass in one, at least, of the following optional subjects:—

ELEMENTARY PHYSICS AND MECHANICS.—Sound, light and heat, as given in Ganot's "Elementary Course of Natural Philosophy"; mechanics of solids and fluids, comprising the elements of statics, dynamics, and hydrostatics.

THE ELEMENTS OF BOTANY.—Oliver's "Lessons in Elementary Botany," Part I.

FRENCH, GERMAN, or any modern language.

In English, arithmetic, British and metrical systems of weights and measures a candidate must obtain 50 per cent. of the marks awarded, and 40 per cent. of the entire course to enable him to pass. In each of the other compulsory subjects the candidate will not be allowed to pass unless he obtain 20 per cent. of the marks obtainable.

The examination is held in Dublin on the first Mondays of January, April, July, and October. The fee is 2*l.* 2*s.*, and has to be paid to the credit of the Society in the Bank of Ireland, and candidates in giving notice of their intention to be present at the examination, which must be done at least fourteen days before the time of the examination, are required to enclose the receipt of their having paid the fee. In case of rejection the re-examination fee is 10*s.* 6*d.* Certificates of having passed any of the examinations accepted by the General Medical Council for registration as a medical student, and the Preliminary examination of the Pharmaceutical Society of Great Britain, are accepted in lieu of the above, provided the examination has been passed at least one year before the candidate presents himself for the licence as a pharmaceutical chemist. The fee of 2*l.* 2*s.* is still payable.

PHARMACEUTICAL LICENCE EXAMINATION.

Candidates for this examination must have attained the age of twenty-one years, and have passed the Preliminary examination or equivalent.

Candidates who passed their Preliminary examination after January 1, 1879, will be required to forward a certificate showing that they have attended a course of practical chemistry of not less than three months' duration in the laboratory of one of the following institutions:—

*The Pharmaceutical Society of Ireland's School.

*The Pharmaceutical Society of Great Britain's School.

The Cecilia Street School of Medicine, Dublin.

The City of Dublin Technical Schools.

The City School of Chemistry and Pharmacy (Limited), Chancery Lane, London, W.C.

The Royal College of Science, South Kensington.

The Queen's College, Belfast.

*The Queen's College, Cork.

*The Queen's College, Galway.

The Royal College of Science for Ireland, Dublin.

The Royal College of Surgeons in Ireland, Dublin.

*The Working Men's Institute, Belfast.

Trinity College, Dublin.

Anderson's College Medical School, Glasgow.

*Mr. S. Templeton's School, Belfast.

Candidates, in addition to these certificates, are required to present a certificate of having attended a course of botany and materia medica at some recognised school. In addition to those schools marked with an asterisk in above list, the Society recognises for these subjects the School of Physic, Trinity College, Dublin. Candidates must have been engaged for four years as apprentice or assistant with, and in the sole employment of, a pharmaceutical chemist (Ireland or Great Britain), registered chemist and druggist of Great Britain, or apothecary; or four years with a chemist and druggist or registered druggist of Ireland, and two years with either of the before-mentioned, provision being made for service with one or more or with firms. *Service with limited companies is not recognised.*

The subjects of the examination are:—

BOTANY.—To recognise the principal indigenous plants used in medicine, to refer them to their natural orders, and to give the definitions and the distinctive characters of their several parts.

MATERIA MEDICA.—To recognise specimens of the drugs of the Pharmacopœia, to describe their characters and active principles, name the sources from which they are obtained, and the official preparations into which they enter; and to detect adulterations.

GENERAL AND PHARMACEUTICAL CHEMISTRY.—The Elementary Laws of Chemistry and Physics, including Chemical Equations. To recognise the chemical substances of the Pharmacopœia; to describe the processes by which they are obtained; Qualitative Analysis (including the tests of the Pharmacopœia) and Volumetric Analysis; and to submit to a practical examination in these subjects.

PRACTICAL PHARMACY.—To translate Latin prescriptions; to detect dangerous doses; to compound and dispense correctly. To explain the processes of making the non-chemical preparations of the Pharmacopœia, and to recognise them; and to have an intimate knowledge of the Sale of Poisons (Ireland) Act, 33 & 34 Vict. chap. 26, 1870.

The opinion of the Council is that the Examiners cannot ignore the B.P. 1898, but will use their discretion in fixing marks.

The fee is 5*l.* 5*s.*, which must be paid into the Bank of Ireland, and the receipt forwarded to the Council fourteen clear days before the examination, together with the Preliminary certificate and the other statutory declarations required. In case of rejection, the fee for re-examination is 1*l.* 11*s.* 6*d.* An interval of six months must elapse between two examinations.

The examination is held in Dublin on the second Wednesday and following days of January, April, July, and October. The address of the Registrar is 67 Lower Mount Street, Dublin.

PHARMACEUTICAL ASSISTANTS EXAMINATION.

This examination was instituted by the Amendment Act of 1890. Assistants to pharmaceutical chemists who pass this examination are competent to transact the business of a licentiate of the Pharmaceutical Society in his temporary absence, but are not entitled to conduct or manage a business or keep open shop on their own account. The examination is held in Belfast and Dublin on the second Monday of January, April, July, and October, at 11 A.M. The fee is 1*l.* 1*s.* Candidates must have passed the Preliminary examination, have served four years in the business, and be 21 years of age. The subjects of the examination are prescriptions, practical dispensing, materia medica, and the quality of specimens, and pharmacy. Seventeen persons have passed the examination, nine of whom have since become pharmaceutical chemists.

REGISTERED DRUGGIST EXAMINATION.

The candidate must have served for four years as an apprentice or assistant to a pharmaceutical chemist, licentiate-apothecary, a registered chemist and druggist, or a registered druggist, or to a person or persons who, had he or they survived or continued in business, would have been entitled to become a registered chemist and druggist or registered druggist. Declarations to this effect have to be made, and a fee of 2*l.* 2*s.* paid into the Bank of Ireland to the credit of the Society's account. If the candidate pass the examination, another 2*l.* 2*s.* is paid for registration. The candidate is "examined with respect to his knowledge of English orthography and composition, arithmetic, and the weights and measures of the British Pharmacopœia, the appearance and properties of the various drugs and chemicals in general use, and the Act of the session of the thirty-third and thirty-fourth year of the reign of her present Majesty, chapter twenty-six" (the Irish Poisons Act). Examinations are held in Dublin, Belfast, and Cork, when a sufficient number of candidates offer themselves for examination at the centres. Full information regarding this and all other examinations

of the Society may be obtained from Mr. Arthur T. Ferrall, Registrar, Pharmaceutical Society of Ireland, 67 Lower Mount Street, Dublin.

APOTHECARIES' ASSISTANTS EXAMINATION.

This examination takes place at the Apothecaries' Hall, Mary Street, Dublin, and may be taken by anyone over 16 with two years' experience in practical pharmacy. It is similar in scope to the Apothecaries' Assistants' London examination. The fee is 2*l.* 2*s.* Particulars can be obtained from the Secretary, Mr. R. Montgomery, M.R.C.S.

EDUCATIONAL INSTITUTIONS.

PHARMACEUTICAL SCHOOLS OF CHEMISTRY, BOTANY, AND MATERIA MEDICA,

67 Lower Mount Street, Dublin.

Director of the Chemistry School, Professor Tichborne; Demonstrator, Mr. P. Kelly; Director of the Materia Medica School, Professor Ninian Falkiner, assisted by Mr. A. F. G. Kerr.

The fees for the courses in accordance with the regulations of the Society are:—Practical chemistry, 6*l.* 6*s.*; botany and materia medica (combined), 2*l.* 2*s.* The Registrar, 67 Lower Mount Street, Dublin, will furnish full particulars and receives the fees.

BELFAST SCHOOL OF APPLIED CHEMISTRY,

44 Dublin Road, Belfast.

Staff: Chemistry, Mr. S. Templeton, Assoc.R.C.Sc., principal; botany, Mr. W. A. Rice, B.A.; materia medica and pharmacy, Mr. T. Harper and Mr. D. L. Kirkpatrick; preliminary subjects, Mr. J. T. Leslie.

Full courses of instruction in all subjects for the Licence examination begin in the last week of September and the first week of January. Occasional students may join at any time. Day and evening classes. Fees: Chemistry (lectures and tutorial work), 2*l.* 2*s.*; practical chemistry (100 hours), 4*l.* 4*s.*; botany and materia medica, 2*l.* 2*s.*; pharmacy, 2*l.* 2*s.*; compounding fee for all subjects, 8*s.* Evening classes, 2*l.* 2*s.* per quarter for two evenings weekly. Classes are also held for the Preliminary and Druggists' licence.

Medicine.

A PEERAGE is possible for anyone who enters the medical profession in this country; knightships are bestowed upon doctors yearly, and baronetcies now and then to those who can earmark 80,000*l.* and are distinctly high as society practitioners, adored of their fellows, or who physic royalty. Yet the average income of the general medical practitioner is said not to exceed 300*l.* That is the sum which Professor Munyon pays the consulting physician whom he keeps on the premises. Doctors in poor practices do not make even that. Withal, the profession is much run after, chiefly because it assures to a man a well-recognised and good social position, and because the work is genteel, intellectual, and extremely human.

It is well that all who think of qualifying in medicine should clearly understand that by sheer merit alone can one get his name entered upon the Medical Register. Social position, money, influence have nothing to do with it, except so far as they may help a man to acquire the knowledge to pass the examinations. An inexorable minimum standard of education is fixed by the General Medical Council, to which the oldest university in the kingdom, as well as the humblest diploma-granting body, must conform. The functions of the Medical Council are akin to those of the Pharmaceutical Societies, except that the Council does not examine. It arranges the syllabus, fixes the curriculum, inspects the examinations, registers those who pass, and controls ethically the men in practice. Its powers over the universities are not so great as over the diploma-granting bodies, but its influence is felt and its position respected by all.

The Council is a three-sectioned body, with headquarters at 229 Oxford Street, London, W., where all students in

England and Wales are attended to and registered; a branch Council exists in Scotland, with an office at 46 George Square, Edinburgh; this is for students in Scotland. A similar arrangement is provided in Ireland at 35 Dawson Street, Dublin. There is a Registrar at each address.

We desire in this article to tell intending students of medicine what is required of them, and what they should do in order to qualify. The first thing to note is that

A PRELIMINARY EXAMINATION

in general education must be passed by everyone before beginning medical studies. It is waste of time studying medicine before passing the Preliminary, because the study does not count in the five years' curriculum required by the Medical Council. This five years (actually four years nine months) begins from the day that one is registered in London, Edinburgh, or Dublin as a medical student, and to be so registered one must pass the Preliminary examination, and commence study at a school of medicine. The Preliminary examination is not formidable, and any public-school boy who has passed the second class College of Preceptors' examination or taken a Government Leaving certificate should have no difficulty with it. "It" is, perhaps, too concrete a term to use, because the examination only exists on paper, the Medical Council not having an examination, and merely saying that any examination certificate to be accepted by the registrars shall include the following subjects, in the whole of which the student must pass at one time:—

A.—English language, including grammar and composition. Marks not exceeding 5 per cent. of the total marks obtainable in

this section of the examination may be assigned to candidates who show a competent knowledge of shorthand.

B.—Latin, including grammar, translation from specified authors, and translation of easy passages not taken from such authors.

C.—Mathematics, comprising (*a*) arithmetic; (*b*) algebra, as far as simple equations, inclusive; (*c*) geometry, the subject-matter of Euclid, Books I., II., and III., with easy deductions.

D.—One of the following optional subjects:—(*a*) Greek, (*b*) French, (*c*) German, (*d*) Italian, (*e*) any other modern language, (*f*) logic. [Logic is to be discontinued after January 1, 1899.]

In a pamphlet entitled "Regulations of the General Medical Council in regard to Registration of Medical and Dental Students" (Spottiswoode & Co., 6*d*.) will be found a long list of the examination certificates which are accepted, but it will simplify matters if we say here that each university in the three kingdoms has a Preliminary examination of its own, which, with few exceptions, must be passed by those who wish to take the medical degrees of the university. But the Matriculation examination of the London University is accepted by nearly all, and the Matriculation examination of a Scotch university suffices for any other university in Scotland. This matter is further dealt with in writing of degrees, and we need only say now, in regard to university matriculation, that the examinations precedent thereto are generally wider in scope than the Medical Council's requirements. The licensing bodies (*i.e.*, those which grant a diploma in medicine, surgery, and midwifery, which alone entitles to registration as a medical practitioner) shelter themselves under the Medical Council's regulations; they do not conduct Preliminary examinations, and only deal with the medical student when he is registered as such, therefore after he has passed the Preliminary examination. This again simplifies the matter, as the student, according to his location, will select an examination most suitable for his purpose. If it is the L.S.A., or M.R.C.S.E. and L.R.C.P.L. that the English student desires to take, his best plan is to enter for the special examination for medical students which the College of Preceptors, Bloomsbury Square, W.C., conducts. It is in the already specified subjects, and the fee is 25*s*. The examination is held in March and September, in Birmingham, Bristol, Leeds, Liverpool, and London. A stamped addressed envelope sent to the college secretary at the above address will bring a copy of the examination syllabus, which gives particulars that would occupy a page of our space. The path of entry in Scotland, apart from university matriculation, is by the Educational Institute, 40 Princes Street, Edinburgh, which holds a special examination similar to that of the College of Preceptors, but held in Edinburgh only three times a year. Fee, 1*l*.

In Ireland the majority of those proceeding to medical studies pass the Matriculation examination of the Royal University (Secretary, Earlsfoot Terrace, Dublin), which is held in June and September in the eight principal towns. Fee, 1*l*.

The "Regulations" referred to contain a list of certificates of British, Indian, Colonial, and Foreign examinations which have been approved by the Medical Council. The aim of the Council is to ensure that persons proceeding to medical studies have had the education which is the first step to culture. The Council has been careful to protect the interests of every individual, male or female, without respect to race. Thus it recognises the German *Abiturienten-Examen* of the Gymnasia and Real-gymnasia, examinations entitling to the French diplomas of *Bachelier ès Lettres* and *Bachelier ès Sciences*, and other corresponding Entrance examinations to the universities on the continent of Europe, so that any of our continental neighbours who think of qualifying in Britain may have no insular obstacle placed in their path. Australians, Canadians, and other colonists may pass their local examinations before ending their school career and beginning medical studies here, and it is specially provided that in the case of natives of India or other Oriental countries, whose vernacular is other than English, an examination in a classic Oriental language may be accepted instead of an examination in Latin.

THE CURRICULUM AND QUALIFICATION.

The curriculum for medical students is substantially the same over the three kingdoms—and the Principality. The

Medical Council specifies the subjects which are to be taught in the schools, how much is to be taught, how the subjects are to be arranged, and to what extent they are included in the examinations. The whole is arranged in three stages, which must be taken in their order. One cannot go on to the second stage until the first is successfully accomplished, nor to the third until the second is done with; and the examining bodies may allow students to take the examinations or stages in sections or subjects provided the very last subjects are not taken until the student can prove that he has been engaged in his professional subjects for at least four years and nine months, and has attained full age of 21 years. Before entering for any examination in any subject the student must produce his class certificates of attendance at the lectures, demonstrations, or practice in the subject; and all this must be done in a school or institution approved by the examining body.

It will be seen from the foregoing that there is no easy way or short cut so far as the curriculum is concerned. There are, however, degrees of stringency in the examinations, and some schools are cheaper than others; but many practitioners live to regret that they have chosen either, because to a medical man above all others a degree is a life-long, usable advertisement. Only the man with a degree can put "Dr." before his name. This is of the highest importance to the general medical practitioner. It is regrettable that in London, where more medical practitioners are annually created than in any other city in Great Britain, the only degrees which the student can conveniently take are those of London University, which are proverbially academic. What the London medical student does, almost without exception, is to take the Apothecaries' Society's diploma, or that of the Royal Colleges, and if he does no more he must be content with plain "Mr." all his life. There is, however, relief for such in the Brussels University M.D., which many take, although it is not registrable—therefore, in strict etiquette, does not entitle one to place "Dr." before his name. Still that is done.

MEDICAL DEGREES

must interest the student at the outset of his career, and we propose to deal briefly with them, showing what has to be done before each of them can be acquired. Beginning nearest home, we take those of the *London University* first. This is a non-teaching university, originally founded as a democratic body in order to give to all classes of students in the metropolis qualifications otherwise only obtainable by residence in the ancient universities in Cambridge and Oxford. Everyone who wishes a University of London degree must pass the Matriculation examination (p. 424). This is a stiff examination, because, like the Minor, the whole of the subjects must be passed at one time, and the extent of knowledge required is above that for all other Preliminary examinations. It is open to any who have attained 16 years of age, and the fact that most of those who pass it are just leaving school shows that with proper tuition it is not too formidable an examination. Undoubtedly anyone who intends to study medicine in London should try to get through the London Matriculation, as that not only suffices for registration, but leaves the way open to a first-class medical degree. The Professional examinations are academic, as we have already said, but with the coaching obtainable at all metropolitan medical schools these examinations become easy.

The *Cambridge* and *Oxford* degrees in medicine require residence in these universities. The former is becoming popular with London students, because it is not necessary to graduate in arts, as is the case in Oxford, where one must take the B.A., and then pass certain terms in the university while studying medicine, the whole taking seven years before the M.B. is obtained. Both these universities are essentially places for the well-to-do, and we may be excused entering more fully into the conditions upon which their degrees are obtained, since few in the drug-trade are likely to undertake them.

The *University of Durham* stands next in English order as a degree-granting body. With this university the Newcastle-on-Tyne School of Medicine is affiliated, but the university requires only one year of the five of the curriculum to be taken in Newcastle, for which reason some London students

go in for the degree. Those who think of taking this will note that a special Preliminary examination in arts must be passed, and if one is already registered as a medical student he must pass in four subjects out of nine in arts.

Victoria University is the body created to grant degrees to the students of the University Colleges of Leeds and Liverpool and the Owens College, Manchester. Outside students cannot proceed to the degrees of the university. All who study at the colleges must pass the Matriculation examination. Certain examinations are accepted in lieu of it, but, except in rare circumstances, it is advisable to take the university's own examination. The Victoria curriculum is like that of the Scotch universities, and the examinations like those of the London one. The degree is good.

• The *University of Wales* has a medical degree, but it is embryonic at present.

The *Scotch Universities* have a world-wide reputation as nurseries for doctors. Edinburgh stands at the head, its medical school being one of the largest in the world, Glasgow comes next, then Aberdeen, and St. Andrews (to which University College, Dundee, is affiliated) is a poor fourth, and may be left out of the reckoning, because a medical student in St. Andrews is as rare as snow in June. However, the Dundee College has exerted itself, and it seems likely to make St. Andrews jog faster. The point to remember about the Scotch universities is that they are now under Commissioners, who have made the examinations the same in all; the Matriculation examination at any of them will admit to all; it is fuller than the London Matriculation, but not so difficult; certain examinations are accepted in lieu of it, but unless such an examination has already been passed the best plan is to prepare for the examination of the university which is to be one's *alma Mater*. At least two of the five years' medical study must be passed in the university whose degree is sought for, the rest being taken in recognised medical schools.

The *Irish Universities* are two in number and two in kind. Dublin University is a parallel to Oxford. There one must graduate as B.A. before proceeding to the medical degrees. The Royal University of Ireland is a parallel to the University of London, but matriculation is taken in two examination stages, after which the student may get his tuition in any approved school in the United Kingdom, and take professional examinations at the proper stages. The degrees of the Royal are open to women.

From the foregoing it will be gathered that the universities are divisible into three classes—viz., (1) those which require residence in College and do not admit women: Cambridge, Dublin, and Oxford; (2) those which require attendance of the university classes for part of the curriculum: Aberdeen, Durham, Edinburgh, Glasgow, and Victoria; (3) those whose degrees are open to all who can show that they have obtained the curriculum in approved schools: London and the Irish Royal. It may be taken as a fact that degrees are more expensive than diplomas, because the conditions of residence or localised teaching imply greater expenditure to those who do not live on the spot, and teaching universities command higher fees than schools which have to compete with them. But a Manchester or Edinburgh man can get his local M.B., C.M., as cheap or cheaper than a London man can get his M.R.C.S. and L.R.C.P. We now come to

DIPLOMAS.

There are five of these available in the United Kingdom, the most appreciated English one being that conferred by the Royal Colleges of Physicians and Surgeons, whose Examination-hall is on the Victoria Embankment, London, W.C. (Secretary, Mr. F. G. Hallett). The diploma granted carries with it the formula—

M.R.C.S., L.R.C.P.

The Royal Colleges require every candidate proceeding to the examinations to produce certificates, as undernoted:—

For the First Examination.—Certificates of instruction in chemistry and physics, and practical chemistry [before or after registration as a medical student]; practical pharmacy [must be given by a registered medical practitioner, or by a member of the Pharmaceutical Society of Great Britain, or in a public hospital, infirmary, or dispensary, and may be taken before registration as a medical student]; elementary biology [after or before registration].

For the Second Examination.—Certificates of having dissected for not less than twelve months the whole human body, and of courses of lectures on anatomy (six months) and physiology, and instruction in practical physiology, including histology (six months).

For the Third Examination.—Certificates of courses of lectures on medicine (six months), surgery (six months), midwifery (three months), pathology, including practical instruction in pathological histology and in bacteriology (three months), pharmacology and therapeutics (three months), forensic medicine including insanity (three months), and in public health. Also of systematic practical instruction in medicine, surgery, and midwifery, including (1) the application of anatomical knowledge to the investigation of disease; (2) the methods of examining various organs and other parts of the body, in order to detect the evidence of disease or the effects of accidents; (3) the employment of instruments and apparatus used in diagnosis or treatment; (4) the examination of diseased structures, whether recent or preserved; (5) the examination of the urine and other secretions, and of morbid products; (6) *post-mortem* examinations. Further, of having performed operations upon the dead subject, and of having attended, after passing the Second examination, the practice of medicine and surgery (including clinical instruction during two winter and two summer sessions), done *post-mortem* work for twelve months, had clinical lectures on medicine and surgery during nine months, attended twelve lectures with practical instruction in diseases of women, and been a medical clinical clerk during six months, and of surgical dresser during other six months. The student must also get clinical instruction in ophthalmic surgery, attend a fever-hospital and a lunatic-asylum, personally take charge of twenty labours, and receive instruction in vaccination.

Every other medical qualification in the three kingdoms requires similar certificates to the foregoing, except that some of the universities place more stress upon botany, and do not recognise any professional instruction received before registration as medical student. The professional examinations are so arranged that students can take portions of them almost every six months, except during the last year of the curriculum, in which it is supposed that the student applies all the knowledge obtained during the four years to the healing of diseases. No one is admitted to the last stages of the Final examination until the full age (21 years) is reached. The diploma is familiarly spoken of as the English "double qual.," and is bestowed upon graduates of British universities who pass the Third examination only, and upon those holding colonial, Indian, and foreign qualification who take the Second and Third examinations together or separately.

Diplomates who intend to practise surgery specially afterwards proceed to the "F.R.C.S." examination, conducted only by the College of Surgeons. The higher physicians' degrees are M.R.C.P. and F.R.C.P. These have no connection with the "double qual.," and are taken only by consulting-physicians; indeed, the etiquette of the College prevents anyone holding M.R.C.P. or F.R.C.P. from engaging in general practice, presenting an account, or demanding a fee.

L.S.A.

The Society of Apothecaries, Blackfriars, London, E.C., grant a licence on similar conditions to the foregoing, but, unlike the Royal Colleges, the Society is as willing to bestow its diploma upon women as upon men. The examinations are supposed to be not quite so stringent as those for the "double qual.," and although the diploma suffices for registration as a general medical practitioner, it does not entitle the holder to call himself "physician and surgeon," nor "Dr.," but it is cheaper than the "double qual.," and some get over the disabilities by taking the Brussels M.D. after it.

L.R.C.P. & S. EDIN. AND L.F.P.S.G.

When the Medical Council several years ago under Parliamentary powers overhauled medical examining bodies, the Royal Colleges of Physicians and Surgeons of Edinburgh, and the Faculty of Physicians and Surgeons of Glasgow, were made into a conjoint board of examiners to grant what is known as the "Scotch triple" carrying the above title. The examinations are substantially the same as the English, but pharmacy comes into the Second examination, and the subjects of the First cannot be taken until the end of the first year. The examinations are held in Edinburgh and Glasgow. Medical graduates and other qualified persons

are exempted, as in the English "double qual." The secretaries are Mr. James Robertson, 48 George Square, Edinburgh, and Mr. Alexander Duncan, B.A., 242 St. Vincent Street, Glasgow.

L.K.Q.C.P.I. AND L.R.C.S.I.

The Royal Colleges of Physicians and Surgeons in Ireland, 6 Kildare Street, Dublin, differ but slightly in their arrangements from the English Colleges. There are four professional examinations (the first including elementary anatomy), and all the subjects have to be taken after registration as a medical student. The Colleges recognise

in pharmacy take the diploma as a matter of course. The appointments for which the diploma is useful are becoming more numerous, and we mention the matter so that those who enter upon a medical career may during the curriculum keep the diploma in mind. At the Scotch universities the diploma equivalent is B.Sc. in public health.

A SUMMARY

of the conditions upon which medical degrees and diplomas are granted is now appended. It should be understood that M.D. is granted in all cases to M.B.'s who write a thesis or submit to an examination:—

Degree or Diploma	Conditions of Entry	Number of Prof. Exams.	Where Studies Pursued	Fees	For Further Particulars Consult
M.B. Lond.	Matric. Exam.	3 in sections, Inter-med. at 19	No special residence	15l.	Registrar, U. of L., Burlington Gardens, W.
M.B. Cantab.	Prev. Exam. or Senior Local	3 in 6 parts	Residence in Cam., 12 terms.	12l. 12s.	Univ. Calendar
M.B. Oxon.	Graduate as B.A.	2 after B.A.	3 years for B.A. medical studies Oxford, or elsewhere	—	Univ. Calendar
M.B. Vic.	Entr. Exam. in Arts	3 in sections	2 years in Coll. of the Vic. Univ., rest elsewhere	15l.	Registrar, Vic. Univ., Owens Coll., Manchester
M.B. Durh.	Prelim. Exam. After registering as student	4 in sections	1 year in Newcastle, rest elsewhere	31l. 6s.	Prof. Howden, Coll. Med., Newcastle-on-Tyne
M.B., C.M., Abdn., Ed., Glasg.	Prelim. Exam. Others <i>pro tanto</i> only	4 in sections	2 years in univ., rest elsewhere	23l. 2s.	Dean, Medical Faculty of each University
M.B. Dubl.	Graduate as B.A.	2 with 15 subjects, 74th year, rest 5th	5 years after Matric.	—	Univ. Calendar
M.B., R.U.I.	Matric. and 1st. Univ. Exam.	4 in sections	No special residence	15l.	See R.U.I., Dublin
M.R.C.S., L.R.C.P. Lond.	Reg. Med. Stud.	3 in sections	" " "	36l. 15s.	Mr. F. G. Hallett, Exam. Hall, Vic. Embankment, W.C.
L.S.A.	Reg. Med. Stud.	2 in sections	" " "	15l. 15s.	Mr. F. Haydon, Apoth. Hall, Blackfriars, E.C.
L.R.C.P. & S.E., L.F.P. & S.G.	Reg. Med. Stud.	4 in sections	" " "	30l.	See above.
L.K.Q.C.P., and L.R.C.S.I.	Reg. Med. Stud. or Matriculate	4 in sections	" " "	36l. 15s.	Mr. G. F. Blake, Registrar R.C.S.I., Dublin
L.A.H.	Reg. Med. Stud.	4 in sections	" " "	22l. 1s.	Registrar, 40 Mary St. Dublin

and accept the analogous examinations of the various medical licensing bodies as equivalent to the First, Second, and Third Professionals. A Preliminary examination in general education is conducted by the examining boards, although the General Medical Council has more than once called upon the Colleges to discontinue it. The examination is held in March and September. Fee, 2l. 2s. Candidates are expected to show a knowledge of the various subjects approximately equivalent to that required of candidates for the Middle-grade Intermediate examination.

L.A.H.

The Apothecaries' Hall of Ireland (40 Mary Street, Dublin) has a board of examiners which includes examiners in surgery, appointed by the General Medical Council, in order that the licence of the Hall may include the whole of the subjects necessary for a complete registrable qualification. Under this arrangement the Hall's licence is obtainable after passing four professional examinations, similar in scope to those of the Irish Royal Colleges.

M.D. BRUX.

This degree is granted by the University of Brussels to any duly registered medical practitioner from any country who passes a *viva-voce* examination (conducted in English through an interpreter) in medicine and surgery and their principal branches. Fees, 22l. Further particulars may be obtained from Dr. Major Greenwood, Hon. Secretary Brussels Medical Graduates' Association, 243 Hackney Road, London, N.E.

D.P.H.

This and other titles represent that the holder has received a diploma in public health. The diplomas are granted to registered medical practitioners only, and as the examinations call for special knowledge of chemistry and the physical sciences, many persons who have been engaged

MEDICAL EDUCATION.

The fees in the above table are merely those for the examinations, besides which 5l. 5s. has to be paid to the Registrar for entering the name upon the Register of Medical Practitioners, and fees are charged for re-examination in the event of failure. The cost of medical education varies according to the school. The bare class-fees range from 70l. as a minimum (Anderson's College, Glasgow) to 170l. (St. Bartholomew's) as a maximum. Any chemist's assistant who has little or no capital, and is willing to work as *locum-tenens* in a pharmacy during part of the curriculum, may safely reckon upon at least 200l. being needed for class and hospital fees, apparatus, instruments, anatomical and other specimens, books, and examination-fees. Everyone can calculate for himself what it will cost to keep him during five years. The following brief paragraphs contain the essential particulars that the intending student requires:—

LONDON SCHOOLS.

Charing Cross Hospital, 62 Chandos Street, W.C.—Fees 115l. 10s., or 127l. 1s. in instalments. Dean, Dr. Moutague Murray

Guy's Hospital, Borough, S.E.—Fees, 157l. 10s., or 168l. in instalments. Has a residential college, in which rooms cost from 14s. to 27s. per week, and board 1l. 1s. per week. Dean, Dr. L. E. Shaw.

King's College, Strand, W.C.—Fees for London M.B. curriculum, 148l., or 164l. in four instalments. Has a residence: terms, 50l. to 60l. (rooms and dinner) per academical year. (All students must attend a course of Divinity lectures in the first year.) Dean, Sir Hugh Beavor, M.D.

London Hospital, Mile End, E.—Fees, 126l., or 136l. 10s. in instalments (sons of medical men 15 guineas less). Warden Mr. Munro Scott, Turner Street, Mile End, E.

London School of Medicine for Women, 30 Handel Street, Brunswick Square, W.C.—Fees for L.S.A. curriculum, 125l., or 135l. in four instalments. Dean, Mrs. Garrett Anderson, M.D.

Middlesex Hospital, Cleveland Street, W.—Fees, 126*l.*, or 136*l.* 10*s.* in instalments. Secretary, Dr. W. Pasteur. Residential college, 14*s.* 6*d.* to 17*s.* 6*d.* per week (exclusive of board). Warden, the Rev. W. G. Deighton.

St. Bartholomew's Hospital, West Smithfield, E.C.—Fees, 157*l.* 10*s.*, or 168*l.* in instalments. Has a residence for students. Warden, Dr. J. Calvert.

St. George's Hospital, Hyde Park Corner, S.W.—Fees, 150*l.*, or 160*l.* in instalments. Dean, Dr. Isambard Owen.

St. Mary's Hospital, Cambridge Place, Paddington, W.—Fees, 139*l.*, or 144*l.* in instalments. Dean, Mr. Geo. P. Field. Residential college, 33 and 35 Westbourne Terrace, Hyde Park, W.; board and lodging, 75*l.* per academic year. Warden, Mr. H. Stansfield Collier.

St. Thomas's Hospital, Albert Embankment, S.E.—Fees 150*l.*, or 157*l.* 10*s.* in instalments. Medical Secretary, Mr. G. Rendle.

University College, Gower Street, W.C.—Fees for London M.B. curriculum, 174*l.* 6*s.*; for "double qual.," 141*l.* 15*s.*, or 147*l.* in instalments. Dean, Professor R. J. Goodlee, F.R.C.S.

Westminster Hospital, Caxton Street, S.W.—Fees, 105*l.*, or 126*l.* in instalments. Dean, Dr. Hebb.

ENGLISH PROVINCIAL SCHOOLS.

Aberystwith and Bangor University Colleges, so far as the First Professional examination is concerned.

Birmingham.—*Mason College* (Queen's Faculty of Medicine).—Fees (complete for double qualification, including dissections), 133*l.* 7*s.* 6*d.* Dean, Dr. Bertram C. A. Windle.

Bristol.—*University College*.—Fees, 105*l.* (in one sum). Dean, Professor E. Markham Skeritt, M.D.

Cambridge.—*University Medical School*. Apply to the Registry, the Register, University, Cambridge.

Cardiff.—*University College*.—Instruction goes up to and including Intermediate M.B. London. Fees (including hospital), 62*l.* 15*s.*, or for two years for L.S.A., 40*l.* 5*s.* Dean, Mr. A. Francis Dixon, B.A.

Leeds.—*Yorkshire College*.—Fees for M.B. Vic. instruction, 141*l.* 10*s.*; for "double qual.," 121*l.* 16*s.* Dean, Mr. Scattergood, M.R.C.S., 41 Park Square.

Liverpool.—*University College*.—Fees, 135*l.* 3*s.* for M.B. Vic. curriculum. Dean, Professor Paterson.

Manchester.—*Owens College*.—Fees for M.B. Vic., 112*l.*, exclusive of extra classes included in the Liverpool. Dean, Professor A. H. Young, F.R.C.S.

Newcastle-on-Tyne.—*Durham College of Medicine*.—Fees, 99*l.* 15*s.*, with some extras. Secretary, Professor Howden.

Sheffield.—*School of Medicine*.—Fees, about 110*l.* Hon. Secretary, Dr. W. T. Cocking, Leopold Street.

IRISH SCHOOLS.

Belfast.—*Queen's College*.—Fees similar to Cork. Registrar, Dr. John Purser.

Cork.—*Queen's College*.—Fees (for R.U.I.), 85*l.* 4*s.* M.B. Registrar, Mr. Alexander Jack, M.A.

Dublin.—*Catholic University Medical School*, Cecilia Street. —Fees for "double qual." or M.B. curriculum, 112*l.* 5*s.* Registrar, Dr. A. Birmingham.

School of Physic in Ireland (Trinity College).—Fees, 124*l.* 19*s.* Registrar, Mr. H. W. Macintosh, M.A., Trinity College.

Carmichael and Ledwich Schools of Surgery.—Fees for "double qual.," 107*l.* 2*s.* Registrar, Mr. G. F. Blake.

Royal College of Surgeons.—Free lectures on comparative anatomy are delivered to matriculated students of the college.

Galway.—*Queen's College*.—Fees as at Cork. Registrar, Professor Townshend.

Part of the curriculum may also be obtained at the Royal College of Science, Dublin, and University College, Stephen's Green, Dublin.

SCOTCH SCHOOLS.

Aberdeen.—*University Faculty of Medicine*.—Fees about 90*l.* Secretary, Mr. Donaldson R. Thom, M.A.

Dundee.—*University College*.—Classes and hospital practice for the first three years, new appointments having recently been made. Secretary, Mr. R. N. Kerr.

Edinburgh.—*University Faculty of Medicine*.—Minimum class and hospital fees, 115*l.* Secretary, Mr. John Kirkpatrick.

School of Medicine of the Royal Colleges.—Fees for triple qualification curriculum, 75*l.* Secretary, Mr. J. R. Whitaker, Surgeons' Hall, Nicolson Street.

Glasgow.—*University Faculty of Medicine*.—Fees about 120*l.* Assistant-clerk, Mr. W. Innes Addison, Matriculation Office.

Anderson's College Medical School, Dumbarton Road, Partick. —Fees for Scotch triple, about 70*l.* Secretary, Professor A. M. Buchanan.

Queen Margaret College, 98 St. George's Road (women's department of the Glasgow University). Fees for M.B., about 120*l.* Secretary, Miss Galloway.

St. Mungo's College, 86 Castle Street. —Fees for triple qualification, about 75*l.* Secretary, Professor M. Laurie.

St. Andrews.—*University Faculty of Medicine*.—The subjects for the first two years of the curriculum are professed. Fees, 3*l.* 3*s.* per subject. Secretary, Mr. J. M. Anderson.

The Winter Sessions of most of the Medical Schools begin on Monday, October 3.

At the Charing Cross Hospital Medical School Professor Virchow will deliver the second Huxley lecture on "Recent Advances in Science and their Bearing on Medicine and Surgery" at 4 P.M.

At St. Thomas's Hospital the Bishop of Rochester will distribute the prizes at 3 P.M.

At the London School of Medicine for Women, Royal Free Hospital, Gray's Inn Road, Dr. J. Walter Carr will deliver the opening address at 8 P.M.

At St. Mary's Hospital Medical School Dr. H. A. Caley will deliver the opening address at 3 P.M.

At Middlesex Hospital Dr. A. F. Voelcker will give the address.

Dentistry.

THERE was a significant paragraph in THE CHEMIST AND DRUGGIST last week about the General Medical Council and unqualified dentists. We are told that the Dental Committee will report to the Council every case brought to their notice of a qualified medical man assisting an unqualified dental practitioner by administering anaesthetics to the patients of the latter. This is significant, because the Dentists Act is largely inoperative from the point of view of those who promoted the Act. Their point of view is that everyone engaged as a practitioner of dentistry should be a registered person, but the Act merely protects the titles of registered dental surgeons, and does not prevent anyone performing dental operations of any kind. Therefore the Medical Council's attitude is significant, and additionally so from the fact that administration of anaesthetics is not by law confined to medical men; indeed, the administration of anaesthetics is not included in the medical curriculum or in the qualifying examinations. The qualification of medical men to administer anaesthetics is, therefore, purely adventitious. However, the fact remains, licentiates in dentistry

are becoming exceedingly jealous of the tone of their profession, and they look upon the efforts of unqualified practitioners not only as unhealthy competition, but as degrading to the profession. The Medical Council's powers over dentists are the same as over medical men. Advertising is strictly *tabu*, particularly because the bodies which grant licences in dentistry require the licencees to sign a declaration that they will not advertise.* Should they break through this agreement their licence is withdrawn, and the General Medical Council may remove their names from the

* The Edinburgh declaration is as follows:—

I hereby promise faithfully to maintain and defend all the rights and privileges of the Royal College of Surgeons of Edinburgh, and to promote its interests to the utmost of my power. I promise, in the event of my admission as a dental licentiate of this college, to refrain from advertising or employing any other unbecoming modes of attracting business, and I shall not allow my name to appear in connection with anyone who does so. I also promise to obey all the laws of the said Royal College, made or to be made.

register. It is to the credit of dental licentiates that this procedure is rarely done, because advertising by door-plate and street-lamp are all that those who hold the L.D.S. generally employ. From one point of view this is a disadvantage and it must be weighed by those who desire to enter dentistry to "push."

The preliminary conditions of qualification are the same as for medicine—*i.e.*, the examination in general education must be passed; the study of dentistry is then commenced, the student immediately registering as a dental student at the head office of the Medical Council, and after four years' study, including three years with a registered dental practitioner and two years in dental college and hospital, the examinations are passed and the diploma obtained. Pupilage with a registered dental practitioner, who is also a chemist and druggist, suffices.

The usual course of procedure is for the L.D.S. aspirant to become an articulated pupil or apprentice to a dentist after passing the Preliminary examination. Premiums, varying from 50*l.* to 250*l.*, are generally required, the higher figures being for those who live indoors, or by dentists with first-class connections. The pupil applies for, and obtains without fee, registration as a dental student. The pupil is engaged on mechanical work almost from the outset of his "time," and for anyone fond of metal-work the mechanical dentistry of the first three years of the pupilage is a distinct pleasure. All the routine of plaster and wax casting, mounting teeth on vulcanite and metal, lathe-work, &c., is gone through during these first three years, and rarely, in good practices, does the pupil appear in the operating-room during that period. Practical dentistry, other than mechanical, must be learnt at the hospital. If the pupil is situated in a town where there is a dental school or dental hospital the third and fourth years are frequently spent in part at the hospital or in attending a class or two; but the best plan, on the whole, is to finish pupilage before entering the dental college, and devote the whole time for two years to the practical and theoretical subjects of the curriculum. The pupil may prepare for the diploma of the Royal College of Surgeons, England, Royal College of Surgeons, Edinburgh, Faculty of Physicians and Surgeons, Glasgow, or that of the Royal College of Surgeons, Ireland. Of these the first is most esteemed, half of the licentiates of dental surgery in the United Kingdom being diplomates of the English College; next in order come licentiates of the Irish College, but out of 490 who hold the Irish diploma only fourteen have passed it *cum curriculo*, so that it is scarcely to be reckoned as a diploma which those who begin studies now go forward to.

THE L.D.S. DIPLOMAS.

The Royal College of Surgeons, England, has now reorganised the examination for this diploma, and all who have registered as dental students since January 1, 1897, must now pass three examinations. The first ("Preliminary Science examination") is in chemistry, physics, and practical chemistry, and candidates may present themselves for it before entering a dental school on producing evidence of instruction in the subjects at an approved school. Objection is not made to passing this examination before registration as a dental student. The "First Professional examination" is open to candidates who have had three years' instruction in mechanical dentistry, have been registered as a dental student by the General Medical Council, 299 Oxford Street, London, W. (there is no registration of dental students in Dublin or Edinburgh), and have attended the necessary lectures and practical instruction in the two subjects of the examination—mechanical dentistry and dental metallurgy. The "Second Professional examination" can only be taken at the end of the fourth year, when the candidate is 21 years old, and after evidence of having received collegiate and hospital instruction in dental anatomy and physiology, dental histology, dental surgery, and the surgery of the mouth at a dental hospital, and practice there during two years. Also, at a recognised medical school, lectures on anatomy, physiology (with practical work), surgery, medicine, performed dissections during not less than twelve months, and attended the practice of surgery and clinical lectures on surgery during two winter sessions. The examination is held in writing in the above subjects, and is followed by a practical examination on the treatment of dental caries, preparing and filling

cavities with gold or plastic filling or material, or to do any other operation in dental surgery; also on the mechanical and surgical treatment of the various irregularities of children's teeth. An oral examination is also held.

The fees amount to 21*l.*; 3*l.* 3*s.* being paid for the "Preliminary Science," 2*l.* 2*s.* for the "First Professional," and 5*l.* 5*s.* for the "Second Professional," the balance being paid before the licence is granted. For further particulars apply to Mr. Hallett, Examination Hall, Victoria Embankment, W.C.

Amongst the institutions recognised for instruction in chemistry and physics are the University Colleges in England and Wales, the leading public schools, the Birkbeck and similar institutes, and the Pharmaceutical Society. Those who were registered as dental students on or before January 1, 1890, take the whole of the subjects in one examination at the same fee.

It may be noted that the English College provides for dental students who wish to take the M.R.C.S. and L.R.C.P. along with it. The advantages of this combination are appreciated, we believe, only by high-class practitioners.

L.D.S. Edin.—The requirements are substantially the same as in England, but there are two examinations only, both taken subsequent to registration as a dental student, and the instruction likewise. The subjects of the First examination are anatomy, chemistry, physics, and physiology, the rest of the subjects of the curriculum being taken in the Second examination. Fees, 15*l.* 15*s.*; but those who commenced studies (*i.e.*, registered as a dental student) before October 1, 1896, pay 10*l.* 10*s.* only. Applications to be addressed to Mr. James Robertson, 48 George Square, Edinburgh. There is an excellent College of Dentistry in Edinburgh.

L.D.S. Glasg.—Examinations and fees as in Edinburgh; but those who register as dental students before October 1, 1898, will not be examined in physics. Dr. A. Duncan, 242 Vincent Street, Glasgow, is the Secretary of the Faculty.

L.D.S. Irel.—This diploma costs 26*l.* 5*s.* *sine curriculo*, or 21*l.* *cum curriculo*. The latter is like Edinburgh. The conditions for the former enable chemists and druggists who are on the Dentists Register to get the diploma. They are as follows:—

Application for examination should be made on a form obtainable at the College, setting forth a Certificate, signed by two Fellows, members or licentiates of a College of Surgeons, and by two L.I.D.S.Irel. (or two members of the British Dental Association, or of the Odontological Society), to the effect that applicant is of good moral character, has been for five years engaged in the practice of dentistry, is a registered dentist, and has not, during the last two years, attracted business as a dentist by advertising or other unbecoming practices. The last fact must also be attested before a magistrate, and the applicant must subscribe to a declaration that he will not advertise.

The candidate must pass the Final examination in dental surgery—theoretical (including dental pathology), clinical and operative; dental mechanics—theoretical, clinical, and practical (including the metallurgy of the workshop). Candidates must pass in all the subjects at the same time. Fee, 26*l.* 5*s.*

The Registrar, Royal College of Surgeons, Dublin, will supply further particulars if desired.

D.D.S.—Degrees in dental surgery granted by American universities are not registrable in this country; any unregistered dentist using a decree of that kind in such a way as to lead people to suppose that he is registered may be fined under the Dentists Act. But the D.D.S. (or its equivalent) may be used by registered persons. The degree may be obtained in New York, Baltimore, Philadelphia, Chicago, and other cities in the United States, less than a year's residence being requisite. An L.D.S. of the United Kingdom can leave here in September and return in March or April following with his D.D.S., or anyone who has studied six months in a dental college on this side may do the same. The fees amount to about \$150.

DENTAL EDUCATION.

The London Dental Schools are expensive compared with those in Liverpool, Edinburgh, Dublin, &c., the first-named charging almost double what the latter do for the two years' curriculum; 115*l.* 10*s.* is the bare London charge. Subjoined are the schools which have arrangements for the complete curriculum, and the fees they charge. To these fees have to be added cost of specimens, instruments, books,

and examination-fees, so that 120*l.* for the two years (apart from cost of living) is the probable minimum:—

LONDON.

Guy's Hospital Dental Department and School, Borough, S.E.—Dean, Dr. Shaw. Fees for L.D.S. Eng., 115*l.* 10*s.*

Dental Hospital of London, Leicester Square, W.—Dean, Mr. Morton Smale. Fees for complete curriculum, 115*l.* 10*s.* in instalments.

National Dental Hospital and College, Great Portland Street, W.

PROVINCIAL.

Birmingham: Mason College Dental Department.—Fees, 75*l.* Hon. Secretary, Mr. John Humphreys, 149 Edmund Street.

Dublin: Dental Hospital and School of Ireland, 23 Lincoln Place.—Dean, Dr. R. T. Stack. Fees, 73*l.* 10*s.*

Edinburgh: Dental Hospital and School.—Dean, Mr. Bowman Macleod, 16 George Square. Fees, 68*l.* 6*s.*

Liverpool: University College School of Dental Surgery.—Dean, Professor A. M. Paterson. Fees, 73*l.* 2*s.*

Manchester: Owens College Dental Department.—Fees, 73*l.* 2*s.* Dean, Professor A. H. Young, F.R.C.S.

Hospital practice, or instruction in practical dentistry as given in the following institutions, is recognised by the examining boards:—St. Thomas's Hospital and Westminster Hospital Dental Departments, Bristol Infirmary Dental Department, Exeter Dental Hospital, Glasgow Infirmary Dental Department, Anderson's College Dental Department, Newcastle Infirmary Dental Department, and Plymouth Dental Hospital.

Veterinary Surgery.

THE man who puts M.R.C.V.S. behind his name is a member of the Royal College of Veterinary Surgeons, 10 Red Lion Square, London, W.C. He is a veterinary practitioner. The conditions upon which the membership of the Royal College is obtained are as follows:—

(1) The candidate must pass the Preliminary examination in general education recognised by the General Medical Council before entering for the first professional examination.

(2) He must study at a recognised veterinary school for four years, and during that time

(3) pass four professional examinations, viz.:—

EXAMINATION A.—Anatomy of domesticated animals: bones, ligaments, joints. Chemistry and elementary physics. Biology: elementary zoology and botany.

EXAMINATION B.—Anatomy of domesticated animals. Histology and physiology. Stable management and manipulation of domesticated animals. Principles of shoeing.

EXAMINATION C.—Morbidity anatomy, pathology, and bacteriology. Materia medica, pharmacy, therapeutics, and toxicology. Veterinary hygiene and dietetics.

EXAMINATION D.—Principles and practice of veterinary medicine and surgery. Clinical medicine, surgery, and obstetrics (horse and other domesticated animals). Meat inspection.

(4) The candidate must be twenty-one years of age when entering for D.

Up to a few years ago the teaching colleges conducted Preliminary examinations, which were so perfunctory that the Royal College stepped in and insisted upon their stopping the examinations, and every student producing a certificate of having passed an examination recognised by the General Medical Council. In this case, of course, it is

impossible to register as a medical student, but it is, we think, imperative that everyone entering a veterinary school should pass the Preliminary examination beforehand.

The rest of the programme need not be elaborated. The examinations are conducted by a Board of Examiners appointed by the Royal College, which visits Edinburgh, Glasgow, and London towards the end of the College terms (May and December). The fee of 5*l.* for each examination has to be paid to the Royal College at a specified date before the examination, and after the fourth is passed 1*l.* is paid for registration. The following are the institutions which instruct students for the examinations:—

Royal Veterinary College, Great College Street, Camden Town, London, N.W.—Educational fee, 84*l.*, paid in four instalments, and 2*l.* 12*s.* 6*d.* library fees. Principal and Dean, Mr. John McFadyean, M.B., M.R.C.V.S. Secretary, Mr. R. A. N. Powys.

Royal (Dick) Veterinary College, Clyde Street, Edinburgh.—Matriculation and education fees, 58*l.* 16*s.*, in four payments. Principal, Professor J. R. U. Dewar, F.R.C.V.S.

The New Veterinary College, Leith Walk, Edinburgh.—Matriculation and education fees, 58*l.* 16*s.*, in four payments. Principal, Professor William Williams, F.R.C.V.S.

Glasgow Veterinary College, Buccleuch Street, Garnet-hill, Glasgow.—Fee, 60*l.*, or 63*l.* in instalments.

The title of F.R.C.V.S. is granted to members who have been a certain time in practice, and on further examination or on presenting a thesis which is approved.

Science.

THAT wearisome problem, "What shall we do with our boys?" has been settled by many parents by allowing the lads to take their bent sciencewards, with the result that a few years later the problem becomes, "What shall we do with our chemists and our electricians?" Science has not yet a recognised status as a profession. Chemistry is the only branch of it which has advanced evolutionarily to a stage of differentiation, and in a generation or two it will probably be as concrete as medicine, with that protection of title which is the right of professional callings. Owing to this, chemistry deserves special consideration. It also happens to be the science which affords employment to as many individuals as all the other departments of science combined—exclusive of metallurgy and mechanics. There are few positions open to botanists and zoologists; in fact, distinguished men in these branches of knowledge are sometimes so stranded that positions are created for them. Nansen is a good example of this. Engineering is not a branch which need be considered here, since it is approached from the mechanics side; and although there are many splendid positions obtainable, the man who has had a workshop training is, in most instances, preferred to him who has only the college course as his foundation.

The training for a professional chemist varies with the kind of work in which the chemist is to specialise. The

following are some titles which chemists assume as most expressive of their speciality or chief work:—

Analytical chemists	*Metallurgical chemists (steel, &c., manufacturers)
*Alkali-works chemists	Cinchona-bark chemists
*Brewers' chemists	*Tanners' chemists
*Soap chemists	*Dyers' chemists
*Explosive-manufacturing chemists	*Sugar chemists
*Oil and linoleum chemists	*Overseers and analysts in chemical-works
Assayers of gold, &c.	Teachers
Metallurgical analysts	

Those marked with an asterisk find employment in factories, at salaries which range from 80*l.* to 1,000*l.* a year—rarely the latter.

The entry to most of these departments is obtainable by practical experience in a specific technical branch, *plus* collegiate training, or by superior collegiate training on the general principles of science. Let us assume that a young pharmaceutical chemist desires to cultivate science, either in association with pharmacy or independently. What should he do? In the first place, it will be to his advantage to have a qualification besides the Ph.C., and the best that are open to him are science degrees and the Fellowship of the Institute of Chemistry. The science degree most esteemed in this country is

THE B.Sc. LOND.

It is liked because no curriculum is necessary for it, and the attendant expense is comparatively moderate. The Matriculation examination of the London University has already been referred to. It is the first to be passed (at 13 years or upwards); then follow at intervals the Intermediate examination in science and the B.Sc. examination.

The University has recently revised the schedule of the Matriculation examination, putting in "elementary science" in place of mechanics. The examination as now constituted (*i.e.*, after the current year) consists of papers in Latin, English (including grammar, history, and geography), mathematics (arithmetic, Euclid, and algebra), and one of the following subjects: Greek, French, German, Sanscrit, Arabic, elementary mechanics, elementary chemistry, elementary sound, light, and heat, elementary magnetism and electricity, or elementary botany. The examination is held in January and June in London and provincial centres; fee, 2*l.*, which has to be paid five weeks before the date of the examination. It is not advisable for anyone to try to prepare for the examination without the assistance of a tutor. There are correspondence classes which may be taken advantage of by those who cannot spare the time to enter day or evening classes.

The fee for the Matriculation examination is 2*l.* Intending candidates should get from the Registrar of the University of London, Burlington Gardens, London, W., a copy of the regulations for the Matriculation examination before they begin to study for it, and they will see in it where and when the examination is held, and when notice has to be given. The examination is held throughout the provinces, and anyone who passes it may be said to have taken the first step towards qualifying in any profession.

A year after passing the Matric. the candidate may enter for the Intermediate, the subjects of which are pure and mixed mathematics, experimental physics, chemistry, and botany, and zoology. The fee is 5*l.* A schedule of the subjects is contained in the "Regulations Relating to Degrees in Science," obtainable from the Registrar. The examination is for a pass or honours and lasts seven days, or ten for honours.

In the B.Sc. examination, which again may be taken a year after the Intermediate is passed, the candidate may choose three out of eight subjects, and take a pass or honours. The fee is 5*l.* The degree of D.Sc. is not obtainable until two years after graduation as B.Sc. The candidate must submit a dissertation or thesis on a special subject (generally an account of a research upon which he or she has been engaged), and if this is approved an examination follows, but not if the candidate has taken B.Sc. with first-class honours.

OTHER SCIENCE DEGREES.

The following universities also grant degrees in science to their matriculated students:—Universities of Aberdeen, Durham, Edinburgh, Glasgow, St. Andrews, Victoria, and Wales; the Royal University of Ireland and Oxford University grant B.Sc. to B.A. graduates only. It will suffice to group these various bodies together, because the general conditions are the same in all. In the first place, a candidate for the B.Sc. degree of any one of these universities must pass the Entrance examination prescribed, and matriculate at the university. He must then enter upon a curriculum of three years in certain subjects, which are specified. Only one of the three years need be spent in the university or its college, but the other two must be spent in approved schools. Scientific examinations, similar to those of the London University, have to be passed. As a rule these are not so stiff as the London two; but there is a set-off to that in the systematic training, which London does not require.

The Ph.D. degree is frequently taken by British students. It requires residence of at least two years in a German university, and, of course, a sufficient knowledge of the German tongue to enable the student to follow the lectures. The certificate of the London Matriculation examination (or any British university Matric.) suffices to pass the holder into a German university. The first year is devoted to the usual collegiate work, and the second to a piece of research, with the orthodox examinations during the years.

Science degrees are usually good testimonials, but employers of chemists are now apt to ask candidates for

vacancies, What training have you had? Schools of science and university colleges are now providing the answer in

DIPLOMAS,

which are conferred upon those who devote two or three years to a systematic course of instruction, the latter part being directed to a special branch of technique. Examinations have to be passed, so that the employer gets a fair guarantee that the holder of the diploma has been properly trained, and such a diplomate is likely to become useful in a factory when he has become accustomed to the larger sphere of operations.

The *Royal College of Science*, South Kensington, S.W., with its Assoc. R.C.S., stands at the head of the diploma-granting bodies. The college exists chiefly for training servants of the nation, such as revenue chemists, teachers, and engineers. Here all the scholars from the science-classes of the kingdom who have distinguished themselves in the May examinations are brought to be finished, and they, with other students, almost fill the college, so that there is little room left for paying pupils. The professoriate train students for eight distinct branches of science for the associateship—viz., mechanics, physics, chemistry, biology, geology, agriculture, metallurgy, and mining. The course of instruction extends to three years, during the first of which all attend the same subjects—chemistry, physics, astronomical physics, mathematics, and drawing. Then they branch off in the second year, and specialise in the third. The fees for the three years' course amount to about 110*l.*

A similar idea is at the bottom of the course of instruction at the *Central Technical College*, Exhibition Road, S.W. (City and Guilds of London Institute). Students, aged 15, are admitted here for a thorough scientific training, so that they may take responsible positions in chemical manufactures, electrical engineering, &c. They must show on entrance that they are well educated (mathematics and mechanics, chemistry, physics, and French or German are the subjects), and at the end of every academic year their progress is tested. The fees are about 25*l.* a year. This college represents the high-water mark of scientific training in this country. Its affiliated institution—the *Technical College*, Finsbury—is not far behind it, but is intended for those who do not aspire to the highest positions, or wish a shorter and cheaper course. Two years is the time for a complete course. The City and Guilds of London Institute further encourages technical education by holding annually examinations in sixty-seven subjects, and granting certificates to those who show themselves to be competent. Full particulars of these will be found in the "Programme of Technological Examinations," published by Whittaker & Co. at 10*d.* Amongst the subjects included are salt-manufacture, alkali-manufacture, soap-manufacture, spirit-manufacture, coal-tar products, painters' colours, oils and varnishes, oils and fats, including candle-manufacture, and photography.

The associateships of University Colleges are conferred on similar conditions to those already detailed, and as these present to the student a carefully-thought-out course of study in well-equipped institutions in the most populous centres of the country, they would be wise to consult the prospectuses of the local bodies before going further afield.

FOR ANALYTICAL CHEMISTS

The acknowledged qualification is the Fellowship of the Institute of Chemistry (30 Bloomsbury Square, W.C.). The charter of this body provides that it is "to promote the better education of persons desirous of qualifying themselves to be public and technical analysts and chemical advisers on scientific subjects; to examine candidates, and to grant certificates of competency, as well as elevate the profession of consulting and analytical chemistry." The value of its fellowship is increasing. Association with the Institute begins by the student of chemistry or pupil of a F.I.C. passing one of the examinations approved by the General Medical Council, and applying to the Institute for election as a student—he must be 17. Within five years of his election as a student, but not before his 21st year, the person must enter the examination for the associateship, and before he can do that he must attend lectures and practical

instruction in chemistry, physics, mathematics, and one other subject out of five specified. This course of instruction must be for at least two years, and two years more must be passed in the laboratory of a F.I.C. He must pass an Intermediate examination in general theoretical and practical chemistry, and a Final Practical examination in a selected branch of chemical science. The branches in the latter are mineral chemistry, metallurgical chemistry, physical chemistry, organic chemistry, and analysis of food and drugs. The specification of the last (which is intended for those who desire to become public analysts or the like) is as follows:—

Analysis of food and drugs and of water, including the assay of alkaloids, and the recognition of poisonous chemicals and crude drugs ordinarily found in commerce and having well-marked physical characters. Candidates will also be required to show a general knowledge of the therapeutic effects of such chemicals and drugs, and of the quantities which, taken internally, would be injurious or fatal to man.

In order to meet the requirements of the Local Government Board in regard to therapeutics, pharmacology, and microscopy, a course of study in these subjects is recommended by the Institute, which should cover the following work:—

The recognition of specimens of any drug or poisonous chemical ordinarily to be found in commerce or employed for technical purposes in the arts or manufactures; the detection by microscopical or chemical examination of adulterations, substitutions, or impurities in food and drugs. Such a course would also include a general knowledge of the therapeutic effects of ordinary drugs, and of the quantities of such drugs and poisonous chemicals which, taken internally, would be injurious or fatal to man.

It is open to all Fellows and Associates to present themselves for an examination as follows:—The recognition of specimens of poisonous chemicals and crude drugs ordinarily found in commerce and having well-marked physical characters; the detection, by inspection or by means of the microscope, of adulterations, substitutions, and impurities. Candidates are required to show a general knowledge of the therapeutic effects of such chemicals and drugs, and of the quantities which, taken internally, would be injurious or fatal to man.

The examination-fees for the associateship are 7l. 7s., and after a certain time has elapsed all associates are promoted to the fellowship without further examination. B.Sc.'s, Ph.D.'s, and college associates are excused certain parts of the examinations.

The fellowship of the Chemical Society and similar societies is not a qualification, but a privilege conferred upon those who have ability or the power to obtain support of those who are already Fellows.

AGRICULTURE.

This subject has now become specialised in many first-class schools and colleges, while, under County Councils, arrangements have been made in rural districts for instruction in specific subjects. The University College courses in agriculture are based on the scheme of the Cirencester College, where in three years students are thoroughly instructed in the science and practice of agriculture. Amongst the colleges which have followed the Cirencester example are the Aberdeen, Edinburgh, and Glasgow Universities, Durham College of Science, the University Colleges of Wales, Leeds, Nottingham, and Anderson's College, Glasgow.

METROPOLITAN SCIENCE SCHOOLS.

CENTRAL TECHNICAL COLLEGE, Exhibition Road, S.W.—The fees for the chemical course amount to 25l. a year. For prospectuses apply to the head office of the City and Guilds of London Institute, Gresham College, Basinghall Street, E.C.

THE TECHNICAL COLLEGE, Leonard Street, City Road, E.C.—The course extends to two years, the fees being 30l. Evening classes are held at moderate fees.

UNIVERSITY COLLEGE, Gower Street, W.C.—Faculty of science. The whole of the subjects for B.Sc. are taught, and the lecture fees are from 4l. 4s. to 7l. 7s. per course per subject. Practical chemistry, 26l. 5s. per session. Secretary, Mr. J. M. Horsburgh.

KING'S COLLEGE, Strand, W.C.—Fees are about the same as at University College. Evening classes are held.

CITY OF LONDON COLLEGE, White Street, Moorfields, E.C.—Evening classes in all science subjects, fees for members 4s., for

non-members 6s. 6d. per course of lectures. Laboratory practice is also obtainable.

Evening classes in science subjects suitable for the Minor and B.Sc. are held at the Polytechnic, Regent Street, W.; the Polytechnic Institute, Borough, S.E.; the People's Palace, Mile End Road, E.; Technical College, Chelsea; the Carpenters' Institute, Stratford, E.; Goldsmiths' Company's Technical and Recreation Institute, New Cross, S.E.; Birkbeck Institute, Bream's Buildings, Chancery Lane, E.C.

PROVINCIAL SCIENCE SCHOOLS.

ABERYSTWTH.—*University College of Wales*.—Fees for the science course, 10l. per session. Registrar, Mr. T. Mortimer Green.

BANGOR.—*University College of North Wales*.—Terms as at Aberystwith. Secretary and Registrar, Mr. J. E. Lloyd.

BARROW-IN-FURNESS.—*Technical Schools*.—Evening classes in science and technology.

BELFAST.—*School of Science and Technology*.—(See Pharmaceutical.)

BIRMINGHAM.—*Mason College*.—Fees for the science classes 4l. 4s. per session in the day classes. Evening classes are held. Secretary, Mr. George H. Morley.

Municipal Technical School, Suffolk Street.—Evening classes. Lecture fees 2s. 6d., laboratory 5s. per subject. Secretary, Mr. George Millor.

BRISTOL.—*University College*.—The fees for the science classes are moderate. Secretary, Mr. James Rafter.

CARDIFF.—*University College of South Wales and Monmouthshire*.—Fees for science classes, 10l. per session. Registrar, Mr. J. A. Jenkins.

DUBLIN.—*Royal College of Science*.—The course of instruction is similar to that in the London Royal College, but the fees are lower. Government scholarships are also held here.

DUNDEE.—*University College*.—Botany, chemistry, and physics are taught in day classes, and chemical technology in the evening at the Technical Institute. Secretary, Mr. R. M. Kerr.

EDINBURGH.—*Heriot-Watt Institute, Chambers Street*.—Day and evening classes are held in all science subjects. Chemistry day lectures 4l. 4s. per session, including laboratory.

GLASGOW.—*The College of Science (Anderson's)*.—Day and evening classes are held, and the fees are low.

LEEDS.—*Yorkshire College*.—The instruction is adapted to the Victoria University degrees and various diplomas. Evening and special classes are held. Fees moderate. Secretary, Mr. W. F. Husband, LL.B.

Leeds Technical School, Cockridge Street.—(See Pharmaceutical.)

LIVERPOOL.—*University College*.—Instruction as at Leeds College. Registrar, Chevalier Londini.

MANCHESTER.—*Owens College*.—The scientific courses at this college relate to pure science and the local industries. There are day and evening classes. Address communications to the Registrar.

NEWCASTLE-UPON-TYNE.—*Durham College of Science*.—Fees for curriculum of B.Sc. Durham 56l. Day and evening classes are held. Secretary, Mr. H. F. Stockdale.

NOTTINGHAM.—*University College*.—Day science lecture fees 2l. 2s. per term. Evening classes are held. Secretary, Mr. P. H. Stevenson.

PLYMOUTH.—*Municipal Science, Art, and Technical Schools*.—Day and evening classes are held in most science subjects.

SHEFFIELD.—*Firth College*.—Day and evening lectures in most science subjects are given at low fees, also practical instruction.

APPOINTMENTS AND HONOURS.

NAVAL HOSPITAL DISPENSERSHIPS are Government appointments in naval hospitals at home and abroad. The following indicate where these are, and the number of appointments in each:—Haslar, 4; Plymouth, 3; Haulbowline, 1; Chatham, 1; Malta, 1; Cape of Good Hope, 1; Jamaica, 1; Bermuda, 1; Hong-Kong, 1. Candidates must not be more than 25 years of age, and must hold either the Major or Minor qualification of the Pharmaceutical Society of Great Britain or the certificate of competency [Licence] granted by the Pharmaceutical Society of Ireland. Pay begins at 5s. per day, and rises to 10s. after twenty-two years' service, with quarters and some allowances. Dispensers serving at Malta and the Cape of

Good Hope get 2s.; at Jamaica and Bermuda, 3s.; and at Hong-Kong, 4s. additional per day. Dispensers are provided with quarters, or the equivalent thereof, and keepers of stores receive an extra 1s. or 2s. per day. Vacancies are advertised in THE CHEMIST AND DRUGGIST when they occur, and candidates should obtain from the Secretary of the Civil Service Commission, London, S.W., a form of application, on acceptance of which by the Commissioners candidates are informed when the examination will take place in London, Edinburgh, and Dublin. The last examination was held on September 7, 1897, and full particulars of the questions for the written examination in (1) pharmaceutical chemistry and (2) materia medica were given in THE CHEMIST AND DRUGGIST, October 23, 1897, page 657. Besides the subjects mentioned, two others are taken *à la voce*—viz., (3) recognition of drugs and chemicals employed in medicine, and (4) practical pharmacy, reading of prescriptions, and detection of errors in prescribing. The maximum of marks obtainable in each subject is 300. Only two candidates presented themselves for examination on the last occasion, and each of them failed in all the subjects. The questions may also be obtained for 6d., in pamphlet-form, from the Queen's booksellers, or through any bookseller. The fee for the examination is 10s. Naval dispensers come under the ordinary regulations for superannuation. The appointments are made by the Admiralty, but the dispensers are treated in every way as Civil servants, and have the usual pensions on retiring—e.g., a man who has served twenty years, and is ordered or permitted to retire on the ground of ill-health, receives $\frac{20}{100}$ ths of his salary (9s. per day). Leave amounting to one calendar month per year is granted.

Note—These dispensers are not in the Royal Navy (doctors in the Navy do their own dispensing), but affiliated to it. The following facts about the duties may interest intending candidates:—

In addition to dispensing for the large number of patients in the naval hospital to which he is attached the dispenser has to provide medical stores for the surrounding naval barracks and dockyards, besides a large number of ships in harbour or on the station. The clerical work, together with the custody and supervision of the stores and connecting departments, is considerable.

Frequently the dispenser has to act as storekeeper and accountant officer—holding the position direct from the Admiralty—and the serving of all such luxuries as wine, spirit, and sago falls to his lot, and necessarily entails an enormous amount of extra work.

Medicine-chests for each of the ships of the Navy are fitted at the hospitals. Each chest is properly equipped according to the complement of the crew for whom it is destined. Gunboats and small vessels which carry no doctor have a small chest with materials in case of scalds and burns, and also a guide-book for the instruction of the chief officer.

The dispensary departments in the hospitals are excellently equipped, and delightful to work in. Everything seems in its proper place, and very rigid rules are observed in the keeping of poisons, which are, so far as possible, kept under lock and key. The poisons and non-poisons are in bottles of distinctive shape and colour.

When a dispenser is ill and is removed into the hospital he is charged for his maintenance, and (it may be useful to add) in case of death his funeral-expenses have to be borne by his friends.

ARMY COMPOUNDERS.—These appointments are held by non-commissioned officers in the Medical Staff Corps, who pass examinations in pharmacy, materia medica, posology, and similar subjects conducted by the medical officers. It is necessary in the first instance to enlist in the corps, and work up to the position through the usual stages, which include drill, nursing, field-work, and the like.

POOR-LAW DISPENSERSHIPS in forty-two Unions in England are open to chemists and druggists, Irish pharmaceutical chemists, apothecaries, apothecaries' assistants, and members of the Army Medical Staff Corps (retired). They are of the annual value of 120l., increasing by increments of 5l. to 150l. per annum, and are under the authority of the Local Government Board.

DISPENSERSHIPS IN PRISONS are open to chemists and druggists only. The pay is the same as in the above. It is necessary to join as warder. Uniform is worn, and the dispensers reside on the premises.

CHEMISTS IN THE I. R. LABORATORIES.—Applicants must be Excise assistants. In the first instance they must compete for vacancies in the Excise between their 19th and 22nd year. The examination is in handwriting, arithmetic, English composition, higher arithmetic, and general geography. The salary begins at 85l. per annum. Such assistants compete amongst themselves for the vacancies in the laboratory, and, if appointed, they receive at least two years' tuition in the Royal College of Science, their salary running meanwhile. Full particulars will be found in the "Civil Service Manual" (1s. 6d.).

EXAMINERS IN THE PATENT OFFICE.—These appointments are suitable for those who have done well in S.K. science-classes. The assistantships (salary begins at 200l.) are open to men between 21 and 25. There is a Preliminary examination in handwriting, orthography, arithmetic (to vulgar and decimal fractions), and English composition; and a Competitive one in précis, geometry (elementary and practical), mechanical drawing, mechanics and mechanism, chemistry, electricity and magnetism, hydrostatics, hydraulics, and pneumatics. The "Civil Service Manual" gives particulars of some other science appointments under the Government.

Besides the appointments above mentioned there are, for medical men and veterinarians, positions in the army which should be inquired about during studentship, as they are valuable to those who at the end of their collegiate career find themselves in lack of the needful.

PHARMACEUTICAL HONOURS.—An ex-Bell scholar tells in this issue all about the two scholarships which the Pharmaceutical Society of Great Britain confers annually upon two students of the Society who top the list in an examination. The scholarships are worth 30l. a year, free education, and a supply of books. The Manchester Association scholarship is of about equal value (without education), and may be held elsewhere than Bloomsbury Square. The Society also gives medals and certificates for herbaria, and the Pereira and other medals to pharmaceutical chemists who were associates of the Society at the time of passing the Major, and who compete in an examination held in July. Each person eligible receives notice from the Registrar. The Redwood and Burroughs Research scholarships are also open to pharmaceutical chemists. A Salter's scholarship is also periodically given (100l. a year). The Pharmaceutical Society of Ireland bestows a gold and a silver medal yearly upon the two licentiates who take the highest number of marks above certain minima, and THE CHEMIST AND DRUGGIST awards prizes monthly to students in analytical-chemistry competitions.

The Laughing Plant.

FROM the *Montreal Pharmaceutical Journal* we get a description of the laughing plant and its effects upon man. It grows in Arabia, and derives its name from the effects produced by eating its seeds. The plant is of moderate size, with bright-yellow flowers, and soft, velvety seed-pods, each of which contains two or three seeds resembling small black beans. The natives of the district where the plant grows dry these seeds and reduce them to powder. A small dose of this powder has similar effects to those arising from the inhalation of laughing gas. It causes the soberest person to dance, shout, and laugh with the boisterous excitement of a madman, and to rush about cutting the most ridiculous capers for about an hour. At the expiration of this time exhaustion sets in, and the excited person falls asleep to wake after several hours with no recollection whatever of his antics. The plant seems to be similar to that known in the Lower California Desert as the loco weed, which has a similar effect upon horses, driving them into a state of boisterous craziness.

THE NEW JAPANESE TARIFF.—It is stated on good authority that the Japanese Government has decided to put the new tariff in force from January 1 next.—*Reuter*.

A Bell Scholar's Experiences.

WITH PRACTICAL HINTS FOR CANDIDATES.

TO call a blush to the face of the average country apprentice it is only necessary to suggest that he should compete for a Jacob Bell scholarship. He thinks of men like Tilden, who have soared to yet higher distinctions, and fears to match his powers with theirs. A plain talk with one who has gone through all the phases of preparation, failure, and success connected with the competition is sure to stimulate such a man to emulation, and may possibly lead him on to success. This is the result of such a talk.

CAREERS OF PAST BELL SCHOLARS.

What has become of some former scholars? A fit name to head the list is W. A. Tilden, D.Sc., now Professor of Chemistry at South Kensington, an F.R.S., and late President of the Institute of Chemistry. Alexander Pedler, F.R.S., is Professor of Chemistry at the Presidency College, Calcutta, and Joseph Bemrose, F.C.S., is one of the professoriate of the Montreal College of Pharmacy. William A. Shenstone, F.R.S., is, perhaps, the most expert manipulator of the day, and fills the post of Science Master at Clifton College, and Henry George Greenish, F.I.C., occupies the chair of materia medica and pharmacy in the School of Pharmacy. Others have devoted themselves mainly to original chemical investigations, including H. A. D. Jowett, D.Sc., of the Wellcome Research Laboratory, Harold Brown, of the Imperial Institute, and T. Tickle, now Salters' Fellow in the laboratory of the Pharmaceutical Society. Among those who have done honour to the medical profession I recall the names of Sidney Plowman, F.R.C.S., and Arthur Pearson Luff, M.D., B.Sc., the latter, in addition, analyst to the Home Office. Not a few have become analysts; of these I may mention F. H. Alcock, F.I.C., and W. E. Crow. Of those who have remained pharmacists few have been attracted back to the counter. One or two have become chief pharmacists in hospitals—e.g., Edmund White, B.Sc., of St. Thomas's Hospital, and W. Elborne, M.A. By far the majority of old Bell scholars will be found to-day in wholesale laboratories, including F. C. J. Bird, J. O. Braithwaite, H. Garnett, F. W. Short, B.Sc., Edward Harrison, B.Sc., and E. H. Gane, whilst Charles Umney, J. S. Battle, John Moss, and R. A. Cripps are well known as wholesale pharmacists. The Examination Board of the Pharmaceutical Society has often been recruited from the ranks of Bell scholars. This list shows, contrary to a common idea, that the larger percentage of Bell scholars have stuck to pharmacy, whilst of those who have gone into kindred professions many have reflected honour on the Society in whose school they received a sound pharmaceutical education.

PERSONAL RECOLLECTIONS.

To pass now to more personal matters, I may say at once that I early resolved, thanks mainly to the advice of my master, to aspire to the distinction of a Bell scholarship. With this intention I attended winter classes in botany, physics, pharmacy, materia medica, inorganic and organic chemistry (practical and theoretical), and French throughout five winter sessions, taking the advanced stages where possible, and always aiming at a first class in the subjects examined by the Science and Art Department. In this way I covered most of the ground, and devoted my attention to the remaining subjects—English, arithmetic and Latin—in the summer months. At the outset I determined to read, if possible, beyond the bare requirements of the Minor syllabus (which may be obtained, together with a useful pamphlet entitled "Advice to Students," free of charge from the Pharmaceutical Society). Having so far mapped out and followed my own course I entered for the examination, and failed to gain a scholarship, though I earned more than the qualifying number of marks. In order to leave no stone unturned, I stifled my disappointment and placed myself under a coach, so as to study with him by correspondence for my next and last chance. At this point I must confess to severe criticism from my friends, who regarded me as a crank who was striving after the unattainable.

However, I paid no heed to their derision, and steadily devoted my spare moments (after 9 P.M.) to close study for another year. This time success rewarded my efforts, and in the following October I commenced my course at the "Square."

LIFE AT THE "SQUARE."

Here began the busiest and certainly the jolliest period of my life. During the Minor course most of the lectures occupied the first hour of the morning, the rest of the day being devoted mainly to practical chemistry, reserving a portion of each week to practical pharmacy and practical botany, as also to the examination of museum materia-medica specimens. About three to four hours per night were allotted to reading up the subject-matter of the day's lectures, and revision of back work. Football engaged our attention on Saturday afternoons until Easter. The Students' Association attracted both the serious and the gay; men went as much to hear their fellows speak, and speak themselves, as to profit by the papers brought before the meetings. Many a man has been glad in after-life that this opportunity was given him of making his maiden-speech in public. The Association possessed a research fund, out of which members were subsidised to the extent of the cost of materials for original investigations. It has always been the custom, as some put it, "for the Bell scholars to have a hand in everything." They accept the position, not merely from personal ambition, but because it gives them a knowledge of the management of public affairs and of men, and far more because it testifies to the esteem in which their fellows hold them. The question of ways and means has more than once presented itself seriously to a Bell scholar. Many have given a part of their evenings to the service of a local pharmacist in return for some small remuneration. The reason for this is not far to seek. The scholarships generally fall to persevering men whose means prevent them from going to the "Square" in any other way. Arrived there, they find that the 30*l.* given them through the generosity of the friends of the lamented Jacob Bell is far from sufficient to carry them through a nine months' course. Under the new curriculum the financial difficulties are increased, since the period covered by the vacation and Major course doubles the expenses. There is one popular source of income during the vacation—viz., *locum tenens* work, and a trustworthy man has no difficulty in getting as much of that class of work as he requires.

LODGINGS.

With regard to lodgings it is advisable not to live with relations if any other arrangement can be made. It is impossible to work so freely and thoroughly at home, in the midst of a circle of friends, as it is in lodgings. The cost of living varies; board and lodging per week may be had from 21*s.* upwards. It is usual to have the mid-day meal near the school. This costs from 8*d.* to 1*s.* per diem; the remaining meals and lodgings may be had for any sum, but 17*s.* 6*d.*, 22*s.*, and 25*s.* per week are the prices usually paid for boarding.

VALUE OF EXTENDED CURRICULUM.

It goes without saying that the extension of the curriculum has great advantages which amply atone for the extra outlay. At the end of the Major course those who pass may stay on in the research-laboratory free of charge for three months or longer, in order to carry out any original investigation, or, if preferred, the analysis of water, wine, &c., may be conducted. In this way the Council provides for a class of men who ask for a "post-graduate" course. Then, again, they may apply for a Redwood or a Burroughs research-scholarship.

PRACTICAL HINTS, BOOKS, &c.

I will now briefly consider a few practical points connected with this subject. If classes are attended during preparation let them be the best; these are cheapest in the long run. Arrange for definite time for study and recreation. Many good students arrive at the "Square" too exhausted by overwork to do themselves justice in the "Square" examinations. The following books will prove useful:—

LATIN.—Virgil, books I., II., and III. of the University Tutorial Series, with notes, vocabulary, test-papers, &c.

(Clive, 3s. each); Smith's "Smaller Latin-English Dictionary" (7s. 6d.); Abbot's "Latin Prose through English Idiom" (Seeley & Co., 2s. 6d.); a copy of the Pharmacopœia Londinensis, 1851 edition; and Ince's "Latin Grammar of Pharmacy" (Baillière, 5s.).

ENGLISH.—Abbot's "How to Write Clearly" (Seeley & Co., 1s. 6d.); Low's "English Language" (Clive, 3s. 6d.).

ARITHMETIC.—Peadlebury's "Arithmetic" (Bell, 4s. 6d.).

FRENCH.—"The French Prose Reader" (Clive, 2s. 6d.).

CHEMISTRY.—Newth's "Inorganic Chemistry" (Longmans, Green, 6s. 6d.); "The Analysis of a Simple Salt" (Clive, 2s.), followed by a more advanced work on qualitative analysis—*c.g.*, "The Owens College Laboratory Tables" (Cornish, 1s. 6d.). At this stage advantage should be taken of the monthly competitions conducted by Mr. Moss in the *C. & D.* With regard to organic chemistry, an elementary knowledge of which is necessary, many read Remsen (Macmillan, 6s. 6d.), but Perkin and Kipping (Chambers, 6s. 6d.) is a far more suitable book on this subject. It has this advantage, that it treats, in a small compass, of all that a student requires for both the Minor and Major courses.

PHARMACY.—The new Pharmacopœia should be taken as the guide to this subject, supplemented by "Squire" or "The Art of Pharmacy." Examiners are fond of asking methods of preparing difficult galenicals.

BOTANY.—Undoubtedly the best book in the English language for beginners is Scott's "Introduction to Structural Botany" (A. and C. Black, Vols. I. and II., 3s. 6d. each). The style is fascinating, and the subject-matter is almost sufficient for the purpose. There are, however, a few terms which are only found in Green's "Manual of Botany" (Vols. I. and II., Churchill, 17s. 6d. the two) or some similar work, and it will pay the student to buy these, as he will need them for his Minor and Major.

To stint a student's library is tantamount to depriving a fighting-line of powder and shot. A word of warning is necessary with regard to the payment of the annual subscription of half a guinea to the Society. More than one would-be candidate has lost his chance through joining the Society too late. It is well to get ready the birth-certificate some months in advance, and a candidate may content himself with three good testimonials. These should preferably include one from the old schoolmaster, and certainly one from the pharmacist to whom the candidate was apprenticed.

THE EXAMINATION-ROOM.

In the examination-room there is no time for long consideration. Not only must ideas flow readily, but the hand must move like lightning. In order to write quickly and legibly, the only safe and sure plan is to use the style of writing adopted by Civil Service clerks. Suitable copy-books are obtainable from any stationer, and a few minutes a day spent in this way will more than repay the drudgery entailed.

ADVANTAGES OF COMPETING.

In conclusion, let us consider first the disappointed, and then the successful, candidates. The former are better for the attempt, both as men and as pharmacists, for does not the poet sing for them:—

Esteeming sorrow, whose employ
Is to develop, not destroy,
Far better than a barren joy?

A better-appreciated advantage, perhaps, lies in the fact that, both at the "Square" and in after-life, the keenest competitors with whom the Bell scholars have to contend are they who first challenged them in the Scholarship examination. As for the successful man, given health and perseverance, whatever path he ultimately chooses his way is made for life. Let him, however, remember that pharmacy still has room for good men in her ranks, and let him scorn those who treat it as an over-done calling. "There's aye room at the tap" can be truly said of pharmacy, and he is wise who takes this advice to heart.

"DISEASES AND REMEDIES" is selling well, and appears to be liked by those who have got it. There is no handier medicine-book for the drug-trade. Price 2s. 6d.; by post, 2s. 9d.

Correspondence.

In writing letters for publication correspondents should adopt a concise, but not abbreviated, style. They are requested to write on one side of the paper only. Letters, with or without a non-de-plume, must be authenticated by the name and address of the writer.

Notice to Correspondents. Queries should be written on separate pieces of paper, and the regulations printed under the sections to which they apply should be strictly observed.

Pharmaceutical Analyst.

SIR,—In reply to your request that I should express my opinion on Mr. Vallet's letter with reference to the Major examination, and the letters and comments which have followed, let me say:—I cannot bring myself to think that the recently-passed amendment to the Pharmacy Act has dealt a death-blow to, or has even seriously affected, the position of Major men. To assume that it has done so would involve the belief that those who have gone in for the Major examination for some years past have done so solely for the purpose of using the title "Member of the Pharmaceutical Society," whereas in my experience they have been influenced by the very proper ambition of acquiring the highest standing afforded by examination in the craft to which they belong. They have joined the Society for the purposes of supporting a legally recognised organisation, capable of much good, and of exercising the functions to which they became entitled as members, in the commonwealth of pharmacy. They look on the title "pharmaceutical chemist" as designating their qualification, and to the extra knowledge gained in acquiring it as in some measure bringing its own reward.

I am, however, painfully aware that either from want of healthy ambition, or from absence of some further beneficial result, the Major examination has not been taken as much advantage of as one could have wished. Although writing in my individual capacity only, I feel sure that the Council of the Society would be prepared to give due consideration to any practicable proposal having for its object increased benefits to those who pass the Major examination. At present the Act of Parliament provides that those who do pass it shall be registered as pharmaceutical chemists, and without a further amendment to the Act this could not be altered. If it were thought prudent the examination could be modified or extended so as to include more analytical work, and there would be nothing to prevent the man who passed it styling himself "pharmaceutical chemist and analyst."

Faithfully yours,

Liverpool, August 26.

CHARLES SYMES.

SIR,—There is much correspondence in your columns apparently useless, none much more so than that on the above title. Why ask for examinations for this qualification while men are free to describe themselves as *apothecary chemists*, as dozens of even unqualified vendors of drugs do now? To desire the title "pharmaceutical analyst" makes pharmacists appear like spoiled children asking for "sugar-plums." The one great reward of the Major examination is the education acquired while preparing, and the pharmacist ought not to expect much other advantage over his brother "chemist and druggist." The country does not need two classes of chemists to serve it, and is unable to distinguish between the two who now serve it. The Minor qualification is sufficient guarantee to the public that the holder is competent. The Major examination becoming un- and will shortly die a natural death, as will the discussion on "Utilising the Major Examination." The ambition to become an analyst is a worthy one, but it can be thoroughly gratified without manufacturing fresh examinations for the giving of a fanciful title, between which and the other one the public would be able to distinguish as much as they are now between the two qualifications in the drug-trade. The Editor of the *Pharmaceutical Journal*, in reply to a correspondent, says he hopes all who aspire to be analysts will become acquainted with the Institute of Chemistry. If this be any criterion of the opinion of the Council, pharmaceutical chemists with ambition had better give up letter-writing and

prepare for the examinations of the above Institute, and become real analysts.

Yours,
T. H. (22/66.)

French Lavender Oil and the B.P., 1898.

SIR,—Mr. H. Wippell Gadd, in his paper on "The Galenicals of the New Pharmacopœia," read at the Belfast meeting of the British Pharmaceutical Conference, stated, "with regard to the compound tincture of lavender, and also to spirit of lavender, it has been noted that foreign oils are not now excluded from the Pharmacopœia, but, as it is difficult to meet with an ol. lavand. exot. which conforms to the official tests, the concession does not appear to amount to much." In the short discussion which followed the reading of this paper, I stated that I had no knowledge of any difficulty in obtaining French lavender oil corresponding to the characters of the Pharmacopœia. Time did not permit of Mr. Gadd further explaining his statement at Belfast; and in his reply, published in your issue of last week, page 384, he states that "he hears from a distiller" that "he (the distiller) doubts if it is at all possible to obtain oil of the B.P. density, seeing that the average does not exceed '875." Having had very many opportunities of examining lavender oils obtained from the South of France from almost every district, and from the leading distillers and distributors, I think it well to state that I have not found on any one occasion a pure oil of lavender that did not correspond to the pharmacopœial requirements for sp. gr.—that is to say, not below 885. Mr. Gadd gives no results of his own examinations of French oils; but it would be interesting to know the other characters, such as optical rotation and ester percentage, of the oils referred to by him as having a sp. gr. of about '875. The following results of the examination of fifteen samples, carried out during the last twelve months, taken without selection, show, in my opinion, the true characters, sp. gr., optical rotation, and ester percentage of pure French oils. It should be noted also that those oils which consist of a mixture of true lavender (*Lavandula vera*) with spike lavender (*Lavandula spica*) have a still higher sp. gr., due to the presence of borneol and other alcohols:—

Characters of French Lavender Oils (*Lavandula Vera*).

No.	Sp. gr. at 15° C.	Optical rotation in a tube of 100 m.m.	Ester percentage
1	·8889	— 5°	31·2
2	·8860	— 7·5°	31·15
3	·8903	— 8°	33·25
4	·8855	— 7·5°	28·7
5	·8874	— 5·5°	33·75
6	·8878	— 6·5°	39·5
7	·8864	— 7·5°	38·2
8	·8880	— 8°	35·2
9	·8930	— 6·5°	38·2
10	·8870	— 5°	32·2
11	·8870	— 6°	38·7
12	·8884	— 7°	36·1
13	·8892	— 7·5°	35·1
14	·8856	— 8°	35·3
15	·8887	— 7°	41·6

It will be evident from the above that there can be no difficulty in obtaining lavender oils answering the pharmacopœial requirements, and I should view with the very greatest suspicion an oil having so low a sp. gr. as '875, and should expect to find its other characters (optical rotation and ester percentage) differ widely from pure French lavender oil. Adulteration with turpentine would be indicated by increase in optical rotation and decrease in sp. gr. and ester percentage.

Faithfully yours,
JOHN C. UMNEY.

Southwark, S.E., August 30.

Testing Thyroid Tablets.

SIR,—I congratulate Messrs. Burroughs, Wellcome & Co. on discovering a test which indicates some trace of iodine in their thyroid tablets.

I confess that I believed the quantity in their preparation so infinitely attenuated as to be undemonstrable. The test

suggested by me is that of the International Pharmaceutical Congress. It is available for preparations which represent the active principle of the thyroid gland with some degree of activity, but is scarcely so suitable for tablets containing only an infinitesimal amount, overlaid with carbohydrates and extraneous matter. The presence of albuminoids modifies, of course, the violet shade of the reaction, but otherwise intensifies it.

As the tablets of the firm in question only profess to represent 5 gr. of the fresh gland, even making the extraordinary supposition that they represent its activity undiminished, I do not think they can be regarded seriously as a therapeutic preparation.

Yours truly,
J. C. MCWALTER.

Dublin, August 27.

The Magnesia in Gregory's Powder.

SIR,—The *Pharmaceutical Journal* has thought proper to adversely criticise my evidence in the recent Gregory's powder case at the Lambeth Police Court, in which I was called to support the defence. The Public Analyst's certificate could not be disputed, and therefore I had one course only open to me.

The facts, however, are these:—

Firstly, that which I said was that calcined magnesia, exposed to a moist atmosphere charged with carbonic-acid gas, would eventually be converted into hydrate-carbonate of magnesia.

Secondly, in reply to the Magistrate, I stated that a medical man would expect to get calcined magnesia in Gregory's powder, but in commercial samples of this preparation I had found an average of 15 per cent. of carbonate.

Thirdly, I remarked the calcined magnesia may have been exposed too long prior to making the Gregory's powder. I also stated that in supposed calcined magnesia of commercial quality 10 per cent. of carbonate is frequently present.

Of the defendant in question I know nothing; I did the work for a leading wholesale house.

I am, Sir, faithfully yours,
FREDERICK DAVIS.
The Laboratory,
Imperial Buildings, Ludgate Circus,
August 29.

Thanks.

SIR,—When I undertook the writing of the paper read before the Royal Institute of Public Health, I ventured to ask through your columns for assistance in the shape of vouched information. I confess I feared the replies might have taken so much time to study and sift as to leave me little time for compiling. It was not so, however.

I desire, through your columns, to thank the two who aided me by most important communications—viz., Mr. R. Parker, of Maida Vale (which was in time to be embodied in the paper), and Mr. J. H. Webb, Luton (received late, but which, I hope, will appear as a footnote when the paper is published by the Institute).

Yours truly,
ROBERT J. DOWNES,
President Ph.S.I.

Dublin, August 30.

Dispensing Notes.

This section is intended for the elucidation of dispensing difficulties. Subscribers and their employes may contribute to it, criticising any of the following notes or contributing notes on prescriptions which they have found to be of unusual interest.

The Incompatible Mixture.

SIR,—I am pleased to find the above has interested some persons, and beg to thank them for tendering their advice as to the best ways of mixing; but still I am in the same position as before, for both myself and my assistant (a thoroughly qualified and competent dispenser) have carefully carried out, separately, the instructions given by all three correspondents, and the result is a miserable failure. Our experience is as follows:—

No. 1, or the mode of procedure given by Mr. Burnett, resulted in a jelly as stiff as glycerin tragacanth.

No. 2. By this method, recommended by Mr. Taylor, we

did not get a satisfactory mixture, but a fluid with particles of jelly floating above. If the particles were strained out then I could obtain a mixture of a satisfactory nature, but I could not do so otherwise.

No. 3, or that of "J. A. W.," resulted in a most unsatisfactory mixture of fluid and jelly which could not be made to blend in anyway whatever.

The experiences of my assistant and myself appear to be in perfect harmony with well-known text-books, for borax and mucilage are stated as incompatible on page 197, lines 9 and 10, in the "Art of Dispensing," also in Muter's "Materia Medica," page 145, and in Squire's "Companion to the B.P.," page 71, it states that "mucilage, when mixed with borax, solidifies," and in the same book, page 1, it states that "mucilage is rendered gelatinous by borax." I may add that before writing you I had tried mixing in almost every possible way, and cannot yet account for the results your correspondents have obtained. I hope that more persons interested in dispensing will try the mixture and state their results, for I consider it one of great interest.

Mr. A. F. Taylor states that the "noted firm" were perfectly right and "Incompatible" wrong, and this being the case, "The Art of Dispensing," Muter's "Materia Medica," and Squire's "Companion" must also be wrong.

Yours truly,

INCOMPATIBLE. (17/5.)

Legal Queries.

We do not give legal opinions by post. Information regarding most legal matters in connection with pharmacy will be found in THE CHEMISTS' AND DRUGGISTS' DIARY, and in "Pharmacy and Poison Laws of the United Kingdom," and Alpe's "Handy-book of Medicine-stamp Duty."

22/72. *Nemo*.—We cannot make trade-mark searches. To ascertain whether a certain mark is registered you, or someone for you, must apply personally at the Trade-marks Office, Staple Inn, Holborn, and pay 1s. per quarter-hour for search. Possibly if you make the inquiry by letter, enclosing a stamped envelope for reply, you may get the information.

18/19. *G. P.*—We think the District Council would be justified in carrying out their proposed scheme of buying certain cottages and erecting a market with shops. Your only course to defeat it is to persuade the ratepayers' meeting to refuse to sanction it, or induce the Local Government Board to refuse the necessary loan.

19/62. *H. A.*—It is customary, but not obligatory, for the purchaser to take over the existing insurance, and if he does so, he of course pays the proportion in respect of the term for which he will get the benefit. As nothing was said at the time of sale, the option to take over the insurance or to leave it is with the purchaser. If he has exercised that option and had the policy endorsed over to himself, he must, of course, pay. If this has not been done the purchaser can take out a fresh policy, and the vendor can probably get the proportion of premium for the unexpired term refunded by the insurance company.

24/11. *Morphia*.—We doubt if the Board of Inland Revenue will agree to the transfer of the methylated-spirit retailer's licence if the document itself has been lost. You might write and ask them. As the new licence dates from October 1, however, you will not gain much. You certainly must not sell it until you are licensed.

24/17. *Rusticus*.—The Board of Inland Revenue allow chemists to sell pure rectified spirit in quantities not exceeding 8 oz. to medical and scientific gentlemen for purposes of medical or scientific research. See THE CHEMISTS' AND DRUGGISTS' DIARY, 1898, page 212.

24/46. *Verax*.—If the unsatisfied judgment debt amounts to 50% or over the money-lender is within his rights in filing a petition in bankruptcy. If he has given any undertaking not to do so for a certain consideration he may be liable for damages for breach of contract, but the particulars you give are very incomplete.

Miscellaneous Inquiries.

We reply to subscribers and their employes only upon subjects of interest to other readers generally. When more than one query is sent write each on a separate piece of paper. When a sample accompanies a query full particulars regarding the origin and use of the sample must be given, and it must be distinctly labelled. Queries are not replied to by post, and those sent anonymously are disregarded.

16/3. *Prelim.*—The Preliminary or First examination is to be abolished after August, 1900. After that date entrance will be by the certificates of certain recognised examinations, in which English grammar and composition, Latin, one modern foreign language, algebra, arithmetic, and Euclid are included.

16/44. *Penance*.—The antipyrin patent expired on February 11, 1898.

7/49. *Verax (N.Z.)*.—Linen-glaze.—Your sample does not contain any gum. It consists of French chalk and cocoanut soap, the former in twice the quantity of the latter.

3/46. *C. G.*—(1) The Preservative-powder for Milk is a mixture of borax and boracic acid in about equal proportions. Such mixtures seem to be preferred to plain boracic acid. (2) French Glaze is the name given to mixtures of French chalk and soap used to sprinkle on linen, just before ironing, to give gloss. See reply to "Verax," 7/49, or "Pharmaceutical Formulas," page 307.

256/71. *Camphora*.—The specimen of powder used for making a lotion for lameness in horses consists of sal ammoniac, with a small proportion of camphor.

15/66. *Atomiser*.—(1) The last ingredient in the prescription for atomiser-fluid is probably the proprietary name for a liquid paraffin. (2) The formula for hydroquinone developer in the 1896 DIARY is all right. Perhaps your customer would prefer it more dilute. See *C. & D.*, May 15, 1897, page 782.

15/8. *J. J. W.*—Corpulency-cure.—We can only detect acetic acid in the sample you send. It seems to be white-wine vinegar.

16/8. *Great Guns* sends a solution which is used for wiping out the barrels of rifles after using cordite cartridges. We find it consists of a mixture of turpentine and castor oil, heavily scented with citronella and camphor.

245/14. *A. W. M.*—The sample of Medicine for Blood-diseases, eczema, &c., seems to consist of succ. taraxaci only.

5/70. *J. G. J.*—The Ointment for Skin-diseases is a mixture of creosote (7ss.) and vaseline (3j.).

9/28. *W. T. F.*—The chemicals you send, used for removing hair from hides, owe their activity to caustic soda, which is used instead of lime for that purpose. Both your samples are crude. In the case of A, the caustic soda has been mixed with "blue billy" of the gasworks, probably only as a diluent.

2/8. *Viator*.—(1) The Whooping-cough Remedy contains as the chief ingredients 3 drops each of ipecacuanha wine and dilute nitric acid, and 20 drops of syr. rhacados in each dose. (2) The residue in making Black-currant Paste ("Pharmaceutical Formulas," page 410) should not amount to so much as you say yours does. More vigorous pulping and rubbing through the sieve are required. The sugar keeps the paste all right, if not too thin; it is undesirable to add preservatives.

17/61. *No Matter Who* says "Pharmaceutical Formulas" is a wonderful book, even if it only makes a lazy chemist ask questions." His question refers to the occurrence of two oils of neroli in the eau-de-Cologne formula, page 183. Is there more than one oil? There are several. Oil of neroli

"petale" is distilled from the petals only of sweet and bitter orange flowers, oil of neroli "bigarade" from the bitter-orange flowers, and oil of neroli "bigarade petale" from the petals only of the bitter-orange flowers. They differ in odour and value; the last being the best. Besides these oils a synthetic oil is now obtainable.

12/44. *W. J. H.*—Liquor Bismuthi.—Our correspondent writes as follows:—

I made some liquor bismuthi et ammonii citratis according to the Pharmacopœia, 1898, about a fortnight ago, using pure drugs, washing the precipitate thoroughly until free from nitrates. About a week afterwards a white deposit was thrown down, as if all the bismuth citrate had come out of the solution. Another week has elapsed, and now the top of the liquid is an ink-black.

The Pharmacopœia formula is not satisfactory, and the precipitation is due to deficiency of citric acid. On this point see the article by Mr. J. C. Umney in the *C. & D.*, June 11, page 955. Mr. Umney found that the process does not work so well as the one of which it is a modification (see "Pharmaceutical Formulas," page 528). The black colouration of the liquor may be due to a trace of sulphide, but it is difficult to speak on this point without knowing the history of the materials.

4/71. *Hamble*.—Upcott Gill, 170 Strand, W.C., publishes, we believe, a cheap book on horse-management suited for a carter's use.

15/35. *Barnetto*.—(1) Cheese-rennet can be prepared from any of the recipes in "Pharmaceutical Formulas" by increasing the quantity of rennet used to at least double. (2) Veterinary mixtures and lotions should not be charged too cheaply, as part of the virtue of the remedy seems to be in the price charged, provided, of course, that the remedy is a useful one.

14/33. *D. M. M.*—A good many medical men use the electric method of removing superfluous hair, among others Mr. James Startin, 15 Harley Street, W.

256/2. *South American* (Demerara).—The use of pumice-stone, followed by solution of chlorinated lime, will effectually remove tobacco-stains from the fingers.

14/25. *J. B. J. B.*—Essence of Smoke is pyroligneous acid. There is a formula for this, and also for the spiced vinegars you require, in "Pharmaceutical Formulas."

18/66. *K. K.*—(1) Many of the official tinctures and liquid extracts can be safely stored in tin vessels; the exceptions (those containing astringent matter or which are strongly acid) will readily suggest themselves. (2) A note on the treatment of gapes in chickens appeared in the *C. & D.*, May 14, 1898, page 812.

18/67. *Calisaya*.—Use ammon. bromid. in place of pot. brom. in your infant's carminative, but do not add any tr. opii.

18/57. *J. W. H.*—Cases of glass mortars suddenly breaking into a thousand pieces are fairly common, if we may judge from the frequency with which we receive boxes of fragments. It is due to the sudden crystallisation of the glass.

18/24. *Ferrum*.—There is no cheap substitute for glycerin in graph-making.

11/41. *Ozone*.—The samples of Scouring-powders for use in laundries are mixtures of caustic soda and carbonate of soda. Three parts of the latter to one of the former is about the proportion to use.

18/11. *C. E. J. & Co.*—You should obtain a copy of "Pharmaceutical Formulas," where you will find the recipes you ask for.

19/38. *Nemo*.—You will find just the formula you require for carbolio tooth-powder in the *C. & D.*, May 7, 1898, page 772.

19/41. *L. B.*—There should be no difficulty in colouring turpentine russet-brown. Try brunswick black and dragon's blood, or an aniline dye.

262/26. *J. M.*—The Black Plate-powder used for cleaning the mountings of harness is finely-powdered animal charcoal.

10/59. *W. K.*—The chip boxes you send are commercially known as $\frac{1}{2}$ -oz. and 1-oz. "cut-downs."

12/31. *Chemicus*.—(1) We cannot advise you as to the female pills. (2) Sal volatile is prescribed with potass. iodid. with the idea of preventing the catarrhal symptoms which sometimes follow its use.

11/5. *Zingib.*—Ginger-wine Syrup, for making aerated ginger-wine:—

Soluble essence of ginger ...	...	3ij.
Soluble essence of orange ...	...	3ss.
Refined caramel ...	...	5vj.
Tartaric acid ...	...	5ij.
Plain syrup, 45° T. ...	...	Cong. j.

One-and-a-half ounce of this syrup is used for each bottle. The quantity of ginger may be increased if desired.

12/70. *W. R. R.*—The condiment-powders you send do not seem sufficiently interesting to warrant us examining them. There are several recipes for these preparations in "Veterinary Counter-practice," "Pharmaceutical Formulas," and back numbers of the *C. & D.*

2/17. *Saponis*.—Your sample of Glove-cleaner seems to be merely a scap-paste, made by dissolving cocoanut-soap (1) in boiling water (4), and flavouring with oil of almonds. There are better recipes in "Pharmaceutical Formulas."

18/8. *G. T. D.*—You should read the chapter on Acne in "Diseases and Remedies." It contains a lot of advice on the management of the skin.

19/44. *J. G.*—The articles on coal-tar and aniline in the "Encyclopædia Britannica," or Thorpe's "Dictionary of Applied Chemistry," should furnish you with ample matter for a lecture on coal-tar.

13/58. *Poorahnah* (West Australia).—Your sample of Horse-condiment resembles the recipe given in "Pharmaceutical Formulas," page 419, except that the flavour is aniseed in place of fennel.

11/7. *Improver*.—We cannot give you any useful advice for the improvement of your shop from your plan. You had better consult with an experienced shop-fitter.

253/11. *Veritas*.—(1) Nerve-tonic to suit your label:—

Quin. sulph. ...	...	...	gr. xxx.
Ac. nit. mur. dil. ...	...	...	5vj.
Tr. gent. co. ...	...	...	3j. 5j.
Sacch. ust. ...	...	...	q.s.
Aq. chlorof. (B.P., 1885) ad ...	...	...	18 oz.

Mix and filter clear.

Adult dose, one tablespoonful three times a day.

(2) Mist. ferri. co. and pil. ferri are the safest "female" mixture and pills you can sell.

15/40. *J. J. C.*—Haust. Gentianæ c. Magnesia (St. George's Hospital):—

Magnes. carb. levis. ...	...	...	gr. xv.
Magnes. sulph. ...	...	...	5j.
Tr. gentianæ co. ...	...	...	mxv.
Inf. gentianæ co. ad ...	...	...	3j.

M.

20/55. *B. A.*—The Registrar of University College, Liverpool, will furnish you with all the necessary particulars as to obtaining the B.A. Vic. degree.

24/29. *Vulpes*.—"Spanish whiting" is the name given to the softest and purest white chalk. It is usually put up in balls.

24/23. *E. E. R.*—You give us no information about the powder you send. We must know something about samples sent before we can judge whether the matter is likely to be of interest to other readers.

Trade Report.

Notice to Retail Buyers.

It should be remembered that the quotations in this section are invariably the lowest net cash prices actually paid for large quantities in bulk, and, for crude drugs, without charges. For fuller particulars see the article "Lowest Trade Terms" in THE CHEMIST AND DRUGGIST, March 19, 1898, p. 473. C.i.f. quotations are for London unless when otherwise stated.

Buyers of essential oils are particularly requested to note that low quotations, especially for Sicilian essences, are rarely, if ever, accompanied by guarantee of genuineness.

BUSINESS this week has been confined to several departments. Chinese produce is looking up, and crude camphor is on the up-grade, but the German refiners keep down the price of the refined product. The slump in phenazone continues. There is a fair business in chemicals generally. Subjoined are the principal movements of the week:—

Higher	Firmer	Lower
Canella Manna	Oil, star anise Shellac	Canada balsam Caustic soda (exp't) Cinnamon Ginger (Cochin) Isinglass Phenazone Strychnine Sugar of milk

Our report of the drug-sales begins on page 434.

Heavy Chemicals.

There are no changes in the heavy-chemical market calling for special note this week, but trade on the whole continues fairly steady, whilst values show little important change.

ALKALI PRODUCE.—Bleaching-powder is in fuller inquiry, especially for export, and some little business continues to be done for next year's delivery. Caustic-soda is very quiet and weak; home prices are unchanged, but for export and forward delivery lower figures are being accepted. Ammonia alkali is steady. Soda crystals firm and somewhat scarce. Bicarbonate of soda in good inquiry at unchanged rates. Chlorates of potash and soda firm at $3\frac{3}{4}d.$ and $3\frac{1}{2}d.$ per lb. respectively. Yellow prussiate of potash steady at $6\frac{3}{4}d.$ to $7d.$ for best Lancashire makes. Salt-cake very firm at 25s. to 26s. per ton on rails, and contracts are reported for next year at the former figure.

TAR PRODUCTS.—Carbolic-acid crystals and crude somewhat quiet; values fairly steady, but with a slight tendency towards the easy side; crude, 60 per cent., 2s., and 75 per cent., 2s. 6d. per gallon; crystals, 34–35° C., $6\frac{1}{4}d.$, and 39–40° C., $6\frac{1}{2}d.$ Naphthalene steady and in fair demand; crude, 30 per cent., $4\frac{1}{2}d.$; solvent naphthalene, 95 per cent., 1s. 4d., and 90 per cent., 1s. 2d.; solvent wood, colourless, 3s. 1d. to 3s. 3d. per gallon; miscible, 4s. 3d.; anthracene, A grade, 4d., and B grade, 3d. to $3\frac{1}{2}d.$; aniline oil, 5d., and aniline salts, $4\frac{3}{4}d.$ Pitch is higher, both for prompt and forward delivery, and is quoted at 25s., f.o.b. East Coast. Refined tar, 11s. 6d. per barrel. Benzols are dull, and both 90 per cent. and 50 per cent. stand at $9\frac{1}{2}d.$ Toluol, 1s. $1\frac{1}{2}d.$ Creosote is moving briskly at about $2\frac{3}{4}d.$, and liquid at 3d.

SULPHATE OF AMMONIA.—Quietly steady, at figures mentioned last week, but it seems probable that somewhat lower values will shortly rule. Exports from Leith last week amounted to 313 tons.

BICHROMATE OF SODA.— $2\frac{3}{4}d.$ less $3\frac{1}{2}$ per cent. for English and Scotch deliveries, and $2\frac{1}{2}d.$ net, f.o.b. Glasgow for export.

BICHROMATE OF POTASH.— $3\frac{1}{2}d.$ less $3\frac{1}{2}$ per cent. for English and Scotch deliveries, and $3\frac{1}{4}d.$ net, f.o.b. Glasgow for export.

SULPHATE OF COPPER.—Quietly steady, at unchanged prices.

SALTPETRE.—British refined, barrels and kegs, respectively 19s. 6d. and 20s. 6d.; German, 18s. 9d. and 19s. 6d.

CREAM OF TARTAR.—A shade lower; powdered, 74s.; and crystals, 72s.

NITRATE OF SODA.—Very firm; refined, 8s.; and ordinary, 7s. 6d.

Liverpool Drug-market.

Liverpool, August 31.

CASTOR OIL.—The s.s. *Barrister* has arrived, and though she brings a fair quantity there is little disposition among holders to shade recent prices of $3\frac{3}{4}d.$ to $3\frac{1}{2}d.$, owing to the strong reports coming from the producing-centres, and the tendency of the market is undoubtedly upward, both spot and forward. First-pressure French is still very firmly held at $3\frac{1}{2}d.$, and in this case also the prices forward are hardening. Madras good seconds are held firmly for $2\frac{1}{4}d.$ per lb.

BEESWAX.—There is some movement, but it is chiefly of a retail character, and the values of Chilian may be said to range from 6l. 15s. to 7l. 15s. for fine pale wax. Peruvian is held for about the same figures.

SULPHATE OF COPPER is firmly held at 16l. 10s. per ton, holders looking for better prices as the result of combination.

CANARY-SEED maintains its character for fickleness, as after the spurt of last week, and about 1,000 bags changing hands rapidly at 28s. 6d. to 29s. 6d., interest seems to have entirely dropped in the article, and there are still sellers at 29s. 6d. with no buyers.

GUMS.—There is an absence of demand for Arabic sorts, the sales being of a very retail description. Owners' quotations remain unchanged at about 70s. to 80s. Medicinal qualities are equally neglected, there being an almost complete absence of inquiry, and the business passing is too trifling to notice.

QUILLAI-BARK has become steady, and the quotations of last week continue to rule the market for the time being.

BALSAM COPAIBA.—Part of the recent import has been sold, but the prices were not allowed to transpire.

KOLA-NUTS continue to arrive slowly, and buyers are wanted at $1\frac{1}{4}d.$ to $1\frac{3}{4}d.$ for good dry, but supplies of fresh are entirely wanting, owing to the troubles in the Sierra Leone districts.

GINGER.—Considerable business has been done in Cochin at 29s. per cwt., while African is nominally held for 19s. to 20s. per cwt.

CHILLIES.—Sierra Leone are moving with greater freedom, and 79 bales fair quality were reported sold at 39s. per cwt.; 45s. per cwt. is asked for finest bright.

BORAX is hardening in value, and the offers of cheap makes seem to be narrowing down. The current prices are 13l. 10s. net for crystals, and 14l. for powder.

Hamburg Drug-market.

Hamburg, August 30.

Business in general is quiet here, and our drug-market is no exception to the rule:—

ALOE is unchanged; Cape is quoted at 50m. per 100 kilos.

BALSAM PERU is a little easier, at 17½m. to 17¼m. per kilo.

BALSAM TOLU is quoted at 325m. to 360m. per 100 kilos.

CAMPHOR (REFINED) steady at 227½m. per 100 kilos.; but very little business is doing.

CITRIC ACID is quiet at 265m. per 100 kilos.

CASCARA SAGRADA is firm and dearer at 42½m. per 100 kilos.

COCA-LEAVES (BOLIVIAN) are offered at 190m. per 100 kilos.

CUMIN-SEED.—Maltese is firm and held for higher prices—viz., 43m. to 44m. per 100 kilos. for new crop.

CARAWAY-SEED shows very little business; the quality of the new crop is not as good as that of previous years; 1898 is quoted at 40½m.; 1897 at 42m.; 1896 at 44m. per 100 kilos.

ERGOT OF RYE is quiet at 130m. to 140m. for good quality.

GENTIAN-ROOT is dull and lower at 34m. per 100 kilos.

HONEY remains firm; Chilian, according to quality, at from 46m. to 58m. per 100 kilos.

MENTHOL.—Firm, though with little demand, at 15½m. to 15¼m. per kilo.

IPECACUANHA is quiet, at 19¼m. to 19m. per kilo. for Rio.

QUININE is flat, and demand very limited, with second-hand sellers at 25½m. per kilo.

WAX (JAPAN) is quiet and lower; sales have been effected at 61m. per 100 kilos.; on the spot, 62m. to 61¼m. is asked. Carnauba wax is dull; early this week grey wax offered from Liverpool at 60m. per 100 kilos., but these offers are now withdrawn. We have large stocks in Hamburg, and quote to-day 65m. to 120m. per 100 kilos, according to quality.

OILS (FIXED).—Castor is quiet. First pressing for spot delivery is held for 56m.; September, 54½m.; October-December, 53½m. per 100 kilos. German rape is quiet, at 51m. per 100 kilos, duty free. Cod-liver is very quiet and without business.

OILS (ESSENTIAL).—Cassia is firmer. Russian anise, 13m. per kilo. Star-anise, 15m. per kilo. Peppermint steady, HGH at 5½m. per lb. Japanese firmly held, with buyers at 6¼m., sellers at 7m. per kilo. Caraway-seed firm, at 9½m. per kilo.

Cablegram.

HAMBURG, September 1, 11 42 A.M.:—Crude camphor is firmer, but the refined product is still obtainable at 228m. per 100 kilos. Japanese peppermint oil is in a strong posi-

tion, and has advanced to 7½m. per kilo. Japanese wax has declined during the week, and the market closes weak at 60m. per 100 kilos.

42 Cannon Street, London, E.C.: September 1.

ACID, CITRIC.—Quiet, and without demand, at 1s. 3d. for English crystals.

ACID, TARTARIC.—Firm and unchanged, at 1s. 1d. per lb. for English B.P. crystals on the spot, and at 1s. 0½d. for foreign. An improvement is looked for in some quarters.

BALSAM, CANADA.—Lower. Bright, thick balsam is now offered at 11½d. to 1s. 0½d. per lb., c.i.f. terms.

BALSAM COPAIBA.—Privately 1s. 4d. has been paid for fair Cartagena.

BLEACHING-POWDER.—Steady on the spot, at 6l. 10s. per ton for 35-per-cent. Liverpool, 5l. 5s., f.o.r. or f.o.b. Quotations for forward delivery are rather easier, and contracts are being made for next year.

CAMPHOR.—Firm. The business done this week includes some 250 cases of crude Chinese on the spot at 84s. per cwt., and forward delivery has also been done at 82s. For Japanese 90s., c.i.f., is asked. Refined is unchanged; but if the German makers would give way there would be a quick rise in prices.

CANELLA.—There is great scarcity of this bark, for which there has been some demand here; but the principal holder wants 50s. per cwt. for the few bales he has, and we hear of nothing less than that.

CASCARA SAGRADA.—Buyers are holding aloof, in the hope of getting easier prices by-and-by; but all the reports are against anything of the kind. From one source we hear that there is a stock hidden in San Francisco; but we question if it amounts to much. Prices are as last week.

CASCARILLA.—New York reports state that the new crop is scarce, and the prices quoted there, c.i.f. London, are 2s. per cwt. higher than our quotations of last week for old stock; but the London holders are still firmer in their views, and now want 50s. for bold bark.

CHAMOMILES.—New flowers are slightly easier, business having been done this week at from 55s. to 57s. 6d. per cwt.

CINCHONA.—The sales in Amsterdam on Thursday, August 25, went off quietly, and, as reported by cablegram in our issue of last week, the unit declined to 4.06c. A portion of the manufacturing bark sold as low as 3½c. per unit, and the highest price touched was 4½c. per unit. The richest bark was a parcel of 20 bales Ledgeriana, which assayed 932 per cent. of quinine sulphate, and the poorest was a Succirubra root-bark, which yielded 148 per cent. Of the 7,503 packages offered, 5,658 sold. The offers were made up as follows:—Ledgeriana, 573 527 kilos.; Succirubra, 54,331 kilos.; Officinalis, 38,070 kilos.; Hybrid, 34,819 kilos.

CINNAMON.—The usual quarterly sales were held last Monday, with a disappointing result, only about half the quantity offered finding buyers, at a decline of 1d. per lb. on superior, and ½d. on ordinary qualities. Of the superior the finest lots passed unsold, the remainder brought 10d. to 1s. 4d. per lb. Usual assortment sold at 8d. to 1s. per lb., and hard woody at 6½d. to 8d. per lb. Four packages shown at the Colombo Exhibition brought 2s. 9d. per lb. Last Wednesday, at auction, 3½d. was bid for ordinary chips, but they were bought in at 3½d. per lb.

COCAINE. The makers of the pure hydrochloride still speak of a firmer market, and their talk is supported by the facts that some are booking small orders only at 9s. 3d. to 9s. 6d. per oz., and some are not selling at all. Crude cocaine, however, is slightly easier, and the last price paid, 250m, would be shaded now.

COCOA-BUTTER.—The next auctions at Amsterdam will be held on September 13, and will consist of 75 tons Van Houten, 10 tons Helm, and 18 tons Suchard brand. On September 6 45 tons Cadbury's brand will be offered by auction in London.

COPPER SULPHATE.—To-day's price is 15l. 12s. 6d. per ton.

CREAM OF TARTAR.—Flat, and with an easier tendency. B.P. powder (99 per cent.) is unchanged, however, at 81s. 6d. to 82s.; 95 per cent., 76s.; and ordinary powder, 90 per cent. to 92 per cent., 74s. per cwt. The Bordeaux quotation is 70s., f.o.b. net, but it is difficult to do business at this figure.

GALLS.—Business has been done in Persian blue recently at 54s. to 55s. per cwt. There have been inquiries for green and white, but no transactions. Holders of blue Smyrna galls are firm owing to reported scarcity.

GLYCERIN.—There has been a little more inquiry during the week, but no change in price.

GUARANA.—Lots of 5 cases are offered at 1s. 4d.; smaller quantities, 1s. 5d. per lb., c.i.f.

HEMBANE-LEAVES.—Foreign leaves are in more plentiful supply. One holder asks from 42s. up to 60s., and even 85s. per cwt. for carefully dried leaves. There is said to be a better demand for the foreign leaves, as they are not now excluded by the British Pharmacopocia.

ISINGLASS.—At the auctions on Tuesday a large supply was offered, and partly sold at somewhat lower prices on the whole. Brazil, 2d. cheaper for Pile 1 and 2; lower qualities unchanged; Saigon irregular, and Russian easier. Bombay leaf and tongue steady. Penang leaf dearer. The following were some of the prices paid:—Brazil, fine lump, 4s. 3d. down to 3s. 4d. for ordinary; purse, 1s. 8d.; honeycomb, 1s. 10d. to 2s. 5d.; tongue, 3s. 3d. to 3s. 10d.; ordinary, 2s. 11d. to 3s. Bombay, bold purse, 1s. 10d. to 2s. 9d.; good small, 2s. 3d.; fine tongue, 3s. Penang, good leaf, 4s. 7d. down to 2s. 9d. for common. Saigon, fine leaf, 6s. 5d. to 7s. 4d.; fair, 5s. 5d. to 6s. 3d.; and ordinary, 4s. 8d. to 4s. 10d. per lb.

JALAP.—Business has been done this week at 5¼d. per lb. for good Vera Cruz.

MANNA.—Advices from Palermo state that the first gathering has been lost owing to the rains, and the second is a doubtful quantity. There are no sellers in Palermo of new crop (for which 2s. 9d. per lb., f.o.b., was the last price paid). Retailers and those who have not placed their orders will have to meet an advance of 25 to 50 per cent.

MASTIC.—The stock of good pale tear is said to be practically exhausted; best parcels are held for 1s. 11d. per lb.

MENTHOL.—Firm, at 7s. per lb. on the spot for good Japanese crystals, which figure has been paid for small parcels.

METHYLATED SPIRIT.—The quotation remains at 2s. to 2s. 2d. per gallon, packages not included, for contract lots.

NAPHTHA.—Solvent: 90-per-cent. 1s. 2d., and 95-per-cent. 1s. 4d. per gallon. Crude, 30-per-cent., 4½d.

OIL, ANISE (STAR).—In better request, and 7s. 1½d. has been paid on the spot.

OIL, CASSIA.—Firm. For 80-per-cent. oil 5s. 6d. per lb. has been paid on the spot.

OIL, CASTOR.—Steady. Medicinal Italian oil is quoted at 36s. per cwt., c.i.f., and first-pressing French at 26s., f.o.b.

OIL, LAVENDER.—Some distillers want 47s. per lb. for the new oil, and only accept 45s. for exceptionally large orders.

OIL, OLIVE.—The crop-prospects from Italy are reported to be good, although the "oil-fly" has appeared in several districts. Quotations for Spanish vary from 28l. 10s. to 29l. 15s., "c. and f.," but few shipments have been made to England lately.

OIL, PEPPERMINT.—Quiet. For Japanese dementholised 3s. 5d. is asked, and 40 per cent., 4s. 11½d. per lb. Offers have been made to Hamburg at 3s. 3d. and 4s. 9d. respectively, and declined. HGH American oil is unchanged. Todd's crystal-white is offered at 4s. 9d. per lb., c.i.f. terms; ten-case lots, 4s. 8d. We hear of no sales of English this week at the high figures the makers ask.

OIL, WINTERGREEN.—Reports from New York indicate a scarcity. Guaranteed pure in tins is offered at 4s. 8d. per lb., c.i.f.

OPIMUM.—In an unchanged and maintained position. Small sales of fine Persian have been made this week at 11s. 9d. on the spot. For arrival there are sellers at 11s. 6d., but no business is reported this week. No business in Turkey, but prices do not give way.

SMYRNA, August 20.—The market is quiet, but firm. Large buyers will not purchase this week except at easier prices, owing to the continual lowering of the exchange, while the holders demand an increase on the last prices paid. The sales for the week are consequently small, amounting to 10 cases new current talequale at the parity of 10s. 4d. per lb., and 2 cases Yerli at 10s. 11d., c.i.f. European ports. Arrivals, 636 cases, against 1,440.

CONSTANTINOPLE, August 26.—The transactions for the week amount to 8 cases soft-shipping, containing 70-per-cent. firsts, at 12s. per lb., f.o.b. Market is quietly steady, though the low qualities are slightly easier. Best grades remain unchanged. The stock of all grades to-day is about 630 cases.

PHENAZONE.—Business has been done at 8s. per lb. this week. Other quotations are 8s. 3d., 8s. 6d., and 9s.

QUASSIA.—The trade in this article is over for the season. The importers' price for logs is 4l. 10s. per ton.

QUICKSILVER.—Steady and unchanged, at 7l. 12s. 6d. per bottle from importers, or 7l. 11s. 6d. in second-hand

A Foreign Office paper dealing with the finances of Spain, and published to-day, says that the revenue was to have consisted of various loans, amongst them one granted on the Almaden Quicksilver Mines of 93,000,000 pesetas (3,720,000l.), but it has been found impossible to raise the loan on the mines either with Messrs. Rothschild, or by public tender in Spain or abroad, and the receipts of the traffic-tax have fallen far short of the sum estimated.

QUININE is unchanged at the last quotations. The split in Java is naturally creating talk, and no one seems surprised at the disagreement, the feeling being that the artificial condition such as Mr. Van Prehn's scheme is believed by some to be. Meanwhile no transactions in Java quinine have transpired. Hydrochloride is in fair demand at 1s. 1½d. per oz.

SEEDS.—There is more inquiry for *Anise*, but no sales are reported; Russian is offering at 19s. 6d., Italian at 24s., and Spanish at 23s. per cwt. Stocks of this article are small. *Cumin* is very firm owing to short crops in Malta and Morocco, but the autumn demand has not yet set in. *Coriander* quiet, at late rates. *Fennugreek* steady, with sales of Morocco at 7s. 6d. per cwt. *Canary* sells quietly at our last quotations. *Caraways* unchanged.

SHELLAC.—More inquiry has been evinced this week, and a firmer tone is apparent. On the spot there has been a good inquiry for second Orange, and the transactions include TN at 63s. to 64s., and AC Garnet at 65s. per cwt. Business has been done in TN for October delivery at 66s.

SPICES.—Zanzibar *Cloves* soon recovered the sudden fall in price which we noted in our last; otherwise there is very little change in the spice-market this week. *Cochin Ginger* was rather easier at the auctions on Wednesday, washed rough selling at 24s. per cwt., Calicut rough at 23s. 6d. per cwt., bold selected at 42s. 6d., small native cut at 33s., and bold and medium at 44s. 6d. per cwt. Japan very firm; a parcel was bought in at 20s., but sales have been effected privately at 18s. 6d. to 20s. for ordinary rough to good plump smooth. Jamaica steady; dull ordinary to middling washed sold at 75s. to 80s. 6d. per cwt. Bengal sells slowly at 19s. per cwt. Zanzibar *Cloves* close easier, with business at 4½d. per lb. for October - December delivery, and at 4¼d. per lb. c.i.f. Continent. Unpicked Penang sold at 5½d. to 5¾d. per lb., and unpicked Amboyna at 4¾d. to 5d. per lb. *Clove stems* realised 1½d. per lb. *Cassia-lignea* firm; fair broken brought 34s. per cwt. *Pimento* slow; only one small lot sold at 4¾d. per lb. for dull clean. *Nutmegs* unchanged. *Mace* firm; bold Penang, pale mixed red, sold at 2s. 4d. to 2s. 5d. per lb. The *Pepper* in sale was all bought in, and privately there is little demand. The latest sales include Singapore black at 4¾d. per lb. on the spot, and at 5½d. for October-December shipment; Singapore white at 8½d., and Penang white at 7½d. per lb. for the same position.

STRYCHNINE.—On August 29 makers reduced the price of B.P. crystals and powder to 1s. 9d. and 1s. 8d. per oz. respectively in lots of not less than 1,000 oz.; 250-oz. lots, 1s. 9½d. and 1s. 8½d.; smaller wholesale quantities, 1s. 10d.

and 1s. 9d. per oz. Salts have been reduced in proportion. "Hulle's" strychnine crystals have also been reduced by 2d. per oz., making the present quotation 2s. per oz. net in 1-oz. bottles. The reduction is said to be due to the competition on export orders.

SUGAR OF MILK.—Best white American powder is now offered at the low figure of 47s. 6d. per cwt., c.i.f. terms. The keen competition among the makers is said to be the cause of the reduction.

TEA.—The tea-market has been a difficult one during August as far as Indians are concerned. Everyone wants good Assam teas, but while sales have been fairly heavy they have consisted largely of poor liquoring teas, ill-cured and undesirable, and such teas are of course cheap enough, leaf Souchong selling from 5d. and Pekoes from 5½d., while semi-broken with wonderful style can be bought at 5½d. to 6d. But good liquoring Pekoes and Pekoe Souchongs and bright tippy good liquoring broken are very few and far between, and are as dear as common tea is cheap. Another month should remedy this state of affairs, but meanwhile it is desirable to buy good teas from hand to mouth. Ceylons are in good supply, and the quality is fair. Common sorts are about on a parity with Indians, but there are a lot of very useful teas of a rather better grade from 6d. to 8d. to be had, and these are worth attention, and are being freely taken in the country. There are also more fine teas to be had, and the value in broken Pekoes from 10d. to 1s. is now more obvious than for some months past. New scented teas are on the market, and the new crop proves to be of good quality and scent, and full prices have been paid. Common Capers have hardened up a bit, and recent very low quotations of 2½d. to 3d. for flakey rubbish appear likely to be a thing of the past for some time to come. New Congous are selling slowly, and while finest teas are wanted the country demand is a dwindling one.

TRAGACANTH.—A considerable business has been done recently, mostly in fourths and lower grades, at full values. Bagdad firsts are quoted at 12l. 15s. to 13l. 10s.; seconds, 11l. to 12l. 10s.; thirds, 10l. to 10l. 10s.; and fourths at 8l. to 9l. 10s. Hog gum has been sold at 52s. 6d., and Syrian at 52s. 6d. per cwt.

WAX (JAPAN).—Quiet. For arrival 31s. per cwt., c.i.f., is quoted for good pale squares on the spot; 32s. is asked, but it cannot be bought in Japan at that parity.

Brine-pumping.

The Northwich and District Compensation Board have resolved to levy a rate of 3d. per gallon of brine pumped by all salt and chemical manufacturers in the district. This will realise, it is said, over 4,000l., and will be used to pay the damage occasioned by the subsidence due to brine-pumping.

Johore Ipecac.

Although the cultivation of the ipecacuanha-plant has been carried on in the Straits Settlements for more than a decade it has made very little progress, and is only grown in sufficient quantities to provide for the local demand. It was in 1837 that the first commercial sample of this drug produced in the Old World found its way here, but it appears to have been of a very ordinary character, and did not suit London buyers. The sample in question came from Johore, and nothing has been heard of it until the receipt of the following letter, dated February 16, addressed to the Royal Gardens, Kew, from the Director of the Singapore Gardens. He says:—

I thought that the cultivation of ipecacuanha here had gone out, but one of our planters tells me he has not only got a very fairly extensive garden of it, but is going on on a much larger scale. It was formerly cultivated by him at Pengerang, in Johore, but it has been moved to Selaugor, near Singapore, where it grows well and pays too, as he gets full price of 10s. per lb.

It is worth this man's while going on with the ipecac. cultivation at that rate—indeed, at any rate, for the future of the South American supply is by no means a certainty.

Drug-auctions in London.

NEW SENNA is now coming forward in fair quantity, and it is hoped that the supplies will continue, but there is practically no evidence as to what the crop is. The quality leaves much to be desired. There was a good supply of sarsaparilla, and Cape aloes was more plentiful than it has been recently, but it was not first-class stuff. Buchu and balsam of Peru were also in good supply. The sales inexpressibly slow, and the subjoined shows what business was done:—

Offered	Sold	Offered	Sold
Aconite-root.....	8 ... 0	Lime-juice	5 ... 0
Aloes (Cape).....	40 ... 40	Loofahs	2 ... 0
Curaçao.....	187 ... 118	Mastic	2 ... 0
Socotrine	55 ... 0	Matico-leaves	19 ... 0
Ambergris.....	1 ... 0	Musk	20 ... 1
Annatto-seed	18 ... 0	Myrrh	31 ... 0
Argol	7 ... 7	Nutmeg-paste	2 ... 0
Asafetida	136 ... 6	Nux vomica	202 ... 87
Balsam Peru	10 ... 0	Oil, bergamot	4 ... 0
" Tolu	15 ... 5	cassia.....	15 ... 5
Benzoin.....	228 ... 39	castor.....	20 ... 0
Buchu	35 ... 7	cedarwood.....	5 ... 0
Calumba	525 ... 101	cinnamon	6 ... 0
Camphor (refined)	54 ... 0	citronella	25 ... 0
Cannabis indica ...	23 ... 0	cod-liver	5 ... 0
Cardamoms	304 ... 90	eucalyptus	38 ... 0
Castorum	4 ... 0	lemon.....	7 ... 0
Cinchona	90 ... 70	lime	4 ... 0
Civet	2 ... 0	nutmeg	3 ... 3
Coca-leaves	8 ... 8	orange	2 ... 0
Colocynth	19 ... 0	rose (Bombay) ...	5 ... 0
Cowhage	1 ... 0	star-anise	3 ... 0
Cubebs	203 ... 0	ylang-ylang	3 ... 0
Cumin-seed	91 ... 0	Orange-peel	31 ... 1
Cuscuta	3 ... 0	Orris-root	31 ... 5
Cuttlefish bone ...	24 ... 0	Puree	3 ... 0
Dragon's-blood ...	1 ... 0	Quince-seed	13 ... 11
Dill-seed	117 ... 0	Rhubarb	161 ... 7
Ergot of rye	39 ... 4	Saffron	20 ... 0
Fennel-seed	20 ... 0	Sarsaparilla	96 ... 38
Galls	23 ... 4	Scammony-root ...	252 ... 0
Gamboge	14 ... 0	Senna.....	718 ... 640
Gentian	11 ... 0	Soy	12 ... 0
Guaiacum	6 ... 0	Squills	42 ... 0
Gum ammoniacum ..	15 ... 10	Tamarinds	51 ... 0
arabic.....	42 ... 3	Tonka-beans.....	19 ... 0
olibanum	5 ... 0	Tragacanth	17 ... 5
sandarac	30 ... 0	Turmeric	701 ... 81
Honey	182 ... 105	Vanilla	43 ... 21
Ipecacuanha (Cart.)	10 ... 0	Wangchi	6 ... 0
(Rio)	38 ... 4	Wax (bees')	939 ... 197
Kamala	19 ... 0	Japan.....	50 ... 0
Kino	10 ... 0	West Indian Moss	4 ... 4
Kola-nuts	31 ... 3	Witch-hazel extract	84 ... 0

Dearer.—Coca-leaves (Ceylon), senna.

Cheaper.—Benzoin, calumba, cardamoms, Curaçao aloes, nux vomica.

ALOES.—Cape unchanged. For poor overheated 18s. per cwt. was paid, subject; and from 19s. 6d. to 26s. for fair bright, but slightly soft. Curaçao sold at easier prices—viz., 13s. to 13s. 6d. for dark capey. Good livery realised 30s., while for glassy and soft 15s. was bid and refused. Socotrine was not wanted; 75s. to 80s. is asked for soft brown to dark.

AMBERGRIS.—A tin of dark undeveloped was taken out without mention of price.

ARGOL.—The only parcel offered sold with fair competition, at 49s. per cwt.. It was good dark cake from the Cape.

ASAFETIDA.—The parcel offered to-day had previously been shown, but buyers were shy. Red and grey mixed block was the only kind sold, and 50s. was paid for it.

BALSAM PERU.—The supply is now coming forward, and is of good quality. Fine worked, of good aroma, was limited in auction at 8s. 3d. per lb.

BALSAM TOLU.—A parcel of softish balsam from Savanilla was limited at 1s. 6d. per lb., and another lot of 5 cases, catalogued for auction, had previously been sold privately a 1s. 9d. per lb.

BENZON.—Nothing new was offered, and prices were unchanged. One lot of old and dark Palembang was offered at 22s. per cwt., but nobody would buy. Glassy Penang, of fair flavour, sold at 48s. to 49s. Of Siam, the kinds sold were pea-size drop of good flavour, for which 6l. 15s. was paid; blocky ditto, 84s., and dark blocky siftings, 50s. For Sumatra kinds an offer of 6l. 2s. 6d. was declined; ordinary small palish almonds, rather false-packed, sold at 4l. 10s. to 5l. per cwt.

BUCHU.—Unchanged. Some very fine green round leaf was offered to-day, and sold at 6d. to 6½d. per lb.; ditto, not so green, 5½d.; and yellowish at 4d. per lb. The *Briton*, from Cape Town, has brought 13 bales.

CALUMBA.—The better qualities did not sell, fair bright washed root being held for 40s.; ordinary brownish and dull mixed sizes sold cheaply, at 9s. to 10s. per cwt.

CANNABIS INDICA.—The parcel offered to-day was said to be the only lot existing in London, but nobody wanted it. The limit was 6d. per lb.

CARDAMOMS.—The exhibits on Wednesday were poor, and included two separate offerings of badly bleached Mysore, which had a blue-like shade of colour. Prices declined 1d. to 3d. per lb. The following prices were realised:—Ceylon-Mysore: Bold good bright and pale, full seeded, 3s. 11d. per lb.; part split, 3s. 8d.; medium ditto, 3s. 4d.; small to medium pale round, 2s. 1d. to 2s. 6d.; medium brown round and lean, 1s. 9d.; good bold longs, 2s. 10d.; brown medium longs, 2s. 5d.; small ditto, 2s. 1d. to 2s. 3d.; mixed sizes and spotty, 2s. 2d.; splits and pickings, 1s. 8d. and 1s. 9d. Malabars were in small supply and did not sell. Grey seeds, full flavour, sold at 2s. 9d.

CASTORUM.—A package of pickings, very dry and skinny, was limited at 35s. per lb., and another mixed but better lot was bought in at 42s. 6d.

CINCHONA.—South American crown and grey bark sold fairly well, good clean Huanoco quill fetching 9d. to 10d. per lb., and Loxa varieties 7½d. to 8½d., according to condition. Thin cultivated yellow bark sold at 3d. to 4¼d., and 1d. for dark and damaged stuff.

CIVET.—Only 1 lot, consisting of low, unsightly stuff, was offered, for which a sporting bid of 5s. per oz. was made. With this the parcel was promptly bought in at 20s. per oz.—a trifle less might be taken.

COCA-LEAVES.—The only variety offered to-day was Ceylon, which sold at 11d. to 11½d. for good bright green. Privately, good green Truxillo leaves are offered at 5½d. to 6d., and dark-green Huanoco at 10d. per lb. c.i.f. There is reported to be an abundant stock of the former in New York.

COLOCYNTH.—Medium to bold broken Turkey apple was limited at 11d.; for the best lot 1s. was wanted, a bid of 10½d. per lb. being rejected. Privately, the market is very quiet at 11d. for good bold apple.

CUBEBS.—Entirely neglected. Good grey sifted berries were held for 24s. to 25s. per cwt. The business done in Amsterdam last week includes 52 bales of cultivated berries at 15c. per ½-kilo.

CUTTLE-FISH.—Dull, brownish bone was limited at 3½d. per lb.

ERGOT OF RYE.—The only lot sold to-day consisted of fairly sound Spanish, at 8d. per lb., at which figure several other parcels were limited.

GALLS.—Italian galls—a kind seldom offered in public auction—sold at 17s. per cwt. Chinese were limited at 56s.

GUM ACACIA.—Three packages of pale picked Trieste grain sold privately at 7l. So-called insoluble Persian gum has been sold privately at 22s. 6d. to 24s. 6d. for pale selected. The supply on the spot is very small and firmly held. It is reported that the crop of this gum is good this year, and Persian merchants on the spot have paid high rates for it, but Bombay will not give these rates.

GUM AMMONIACUM.—Only one parcel offered, and partly sold, at 35s. for blocky almonds, rather drossy mixed, of good flavour; dark and partly blocky drop, 25s.; and partly blocky drop, mixed with wood and seed, 12s. 6d. per cwt.

HONEY is in better request, but there is no disposition to pay higher prices for it. To-day's offerings were poor on the whole. Jamaica sold fairly well, at from 18s. for unfiltered to 22s. for syrupy bright of fair flavour. Some dull brownish sold at 16s. A parcel of Chilean partly sold at 20s. to 21s. per cwt. for fair. Australian did not sell.

IPECACUANHA.—Good sound Rio root sold at 9s. per lb.; picked was held for 9s. 2d. per lb. No Cartagena sold, 5s. 6d. being asked for fine bold. The Nile, from Monte Video, has brought 15 bales of Rio.

KINO.—Without demand. Good dark ruby East Indian grain was held at from 12s. to 12s. 6d. per lb.

KOLA.—Neglected. The only sale in auction was 3 bags of African quarters, at 1d. per lb., subject to approval.

MOSS, WEST INDIAN.—Four barrels of this moss, which has all the appearance of *Chondrus crispus*, sold at 5s. per cwt.

MUSK.—One bottle (18½ oz.) of Nepaul grain-musk, which was put up for the third time in auction to-day, found a buyer at 33s. per oz.; for dry low grain, 50s. was asked. Three other lots, consisting of 12 packages, were all bought in.

MYRRH.—Good bold sorts were limited at 5l. to 5l. 10s. per cwt. The only sale was a parcel of siftings at 41s. Dark and stony pickings were limited at 15s. per cwt.

NUX VOMICA.—Bold silvery-grey seed was limited at 10s. per cwt.; for small dark seed 5s. 6d. was paid, and 1s. for sweepings. Another parcel, consisting mostly of dull brown seeds, sold cheaply, at 6s. 6d. to 6s. 9d. per cwt.

OIL, CASSIA.—Oil containing 84-per-cent. cinnamic aldehyde, according to analysis, sold at 5s. 6d. per lb., which price has been paid privately this week; 80-per-cent. was held for 5s. 9d.

OIL, COD-LIVER.—No demand. The limit placed on a parcel of Anglo-Norwegian 1897 oil was 76s. per cwt.

BERGEN, August 27.—The market still remains very quiet, sales for the past week being very small. For best Lofoten non-congealing medicinal oil, 80s. per barrel, f.o.b., would now be accepted. Exports from Bergen up to date have been 6,115 barrels, against 5,592 barrels at the same time of 1897.

OIL, NUTMEG.—With some eagerness buyers began to bid from 1d. per oz. for Singapore distilled oil, and ultimately 1 dozen bottles sold at 1½d. per oz., another at 1¾d., and a third at 1½d.

OIL, YLANG-YLANG.—Genuine oil of good odour, from Manila, was held for 3s. 4d. per oz.

ORANGE-PEEL.—A case of thin Maltese strip, of medium colour, sold without reserve at 3¾d. per lb.—the only sale in auction. For good bright thin from 7d. to 8d. is wanted.

ORRIS.—Large orders have been executed in Leghorn this week for the United States and Italy, which have given a firm tone to the market. Privately, 40s. is asked for picked Florentine. In auction the Florentine offered was bought in at 50s., 45s., and 42s. per cwt. Another lot of 5 bags Mogador sold without reserve at 15s. per cwt.

QUINCE-SEED.—A parcel of 11 bags, from the Cape, sold at 1s. per lb. for fine clean, and 10d. for seconds.

SARSAPARILLA.—Amongst the Lima offered to-day were several bales of an exceptionally bold root, rough in appearance and generally unlike Lima in character. It is probably not derived from the same plant as the Lima, but comes from the same district in Panama, and is said to yield a good extract. The sales left prices unchanged. Good fibrous grey Jamaica sold at 1s. 8d. per lb.; first-class damages at 1s. 6d. and 1s. 7d.; second ditto, 1s. 4d. For fine Lima with fine fibres, 1s. 6d. is wanted. Rough Guayaquil sold; at 10d., subject. Privately, good Tampico is offered at 3¾d. per lb., c.i.f. terms.

SCAMMONY-ROOT.—Privately the market is very quiet, with moderate supplies.

SENNA.—Of the large supply Tinnevely offered, about 450 bales were of new crop, the bulk of this showing a very fair colour, although size ran, on the whole, small to medium only. For the small spotty leaves there was a strong competition, and it sold readily at ¼d. per lb. advance—at 1¾d. to 2d. per lb. The new-crop also sold well, at 2½d. to 2¾d.

per lb. for medium leaves of fair to good bright green. Mecca: 47 bales of this undesirable quality held for ½d. per lb. For Alexandrian small clean leaf, half-broken, 6½d. was bid, but 7d. was wanted. Fine quality of Alexandrian is still scarce, and wanted.

SQUILLS.—Pale hard dry was limited in auction at 3¾d. per lb.

TAMARINDS.—A bid of 9s. 3d. per cwt. was made for Antigua, but no business resulted. The best lots were held for 10s. per cwt.

TONCA-BEANS.—Fair frosted but soft Angostura beans were held at 4s. per lb. For foxy Paras, from 6d. to 1s. was asked, according to quality.

TRAGACANTH.—The supplies were only of low qualities, and what sold consisted of very dark leafy sorts, which sold at 45s. and 50s., and siftings, ditto, 35s. per cwt.

TURMERIC.—Rather mixed Cochín finger and damaged sold at from 9s. 6d. to 12s. per cwt.

VANILLA.—Only a poor assortment offered, and mostly sold at easier rates. Bold Bourbon beans, of fine chocolate colour, realised 18s. 6d. to 21s. per lb.; foxy Bourbon, of various lengths, 5s. to 13s. for slightly crystallised; various mouldy lots, 2s. 6d. and 3s. 9d. Seychelles, fine frosted 6½ inch, 19s.


WAX, BEES'.—In better demand, but, privately and publicly, without alteration in rates. In auction the bulk of the offerings were good Jamaica and Madagascar, and the following rates were made:—Australian, good hard yellow, sold at 6l. 2s. 6d. per cwt. For Italian, clean orange, 6l. 10s. is wanted. Good hard fair-coloured Jamaica sold at 6l. 10s. to 6l. 15s., and dull sorts at 6l. 5s. For Madagascar, part earthy and wormy, 5l. 5s. was paid, and up to 6l. for good sound yellow even colour. Ordinary Zanzibar sold at 5l. 5s. to 5l. 17s. 6d.

Varia.

COMPANIES BILL.—The Select Committee of the House of Lords appointed to consider the Companies Bill have issued a report showing that they met eight times and took evidence. They state that they "have been still unable to complete the inquiry, and therefore beg to recommend that if the Bill be again introduced into your Lordships' House, a Committee be again appointed." The Committee consisted of the Lord Chancellor (Chairman), with Lords Leven, Dudley, Kimberley, Belper, Wolverton, Revelstoke, Hillingdon, Macnaghten, Monckton, Mount-Stephen, Farrer, Davey, James, Aldenham, and Shand.

A CHEMICAL COMBINE.—Efforts are being made to form a combination of the large chemical companies of the United States, who are desirous of maintaining prices at a profitable basis. The leaders of the movement are three large New York firms—viz., the Nichols Chemical Company, the Grasselli Chemical Company, and James L. Morgan & Co. They have come to the conclusion that something must be done to prevent the inroads of the smaller men on their profits. They contend that the little men, with their smaller expenses, have been able to cut prices to figures that have left no profits to the big houses. It is hoped to bring into the combination the Philadelphia manufacturers, as well as some of the Eastern companies.

THE distillation of lemongrass and other similar oils in the Straits Settlements appears to be a decaying industry, judging from information received at Kew from the Director of the Singapore Gardens and Forest Department. Formerly, we are told, the production of citronella, lemongrass, &c., was chiefly in the hands of one man, who had a distillery outside Singapore. He, in the course of time, died, and nobody else appears to have had sufficient energy and ability to put the industry on a firm footing. As a matter of fact the whole business is diminishing, but the Director is doing his best to stimulate cultivation again. He recommends that vetiver, patchouli, cajuput, kananga, clove, nutmeg, &c., be tried, and concludes the natives would buy the oils if no one else did.



IRISH SUPPLEMENT TO THE CHEMIST AND DRUGGIST

SECOND YEAR.

SATURDAY, SEPTEMBER 3, 1898.

No. 21.

Editorial Notes.

THE event of the month has been the annual meeting of the British Pharmaceutical Conference, which, for the second time in its history, met in Ireland, this year at Belfast. The previous Irish session of the Conference was in 1878 at Dublin.

The Local Committee, assisted by all classes of pharmaceutical workers, joined in earnest to make the meeting a success, and it is acknowledged on all sides that their efforts resulted in one of the most enthusiastic meetings ever held.

The Local Executive Committee were ably assisted by a Ladies' Local Committee, whose work was to look after the wives and sisters of the pharmacists attending the Conference while the more serious work of the session was in progress. We give photographs of the two committees on pages 114 and 116.

The Lord Mayor of Belfast officially welcomed the members of the Conference on the morning of August 9, and was followed by the Rev. Dr. Hamilton, the Principal of Queen's College, where the Conference was held.

Dr. Charles Symes, of Liverpool, was the President of the Conference this year, and delivered an address which occupied thirty-seven minutes. It dealt with the progress of pharmacy, examinations, the Pharmacy Acts, Food and Drugs Act, the metric system, the Petroleum Act, Inland Revenue regulations, synthetic remedies, and the new British Pharmacopœia.

There were twenty-three papers read on various subjects of interest both to the practical and to the scientific pharmacist. The afternoon of Wednesday was occupied with a discussion on the new B.P., which was not the least interesting part of the proceedings.

The social side of the meeting was not neglected, the principal functions being a *conversazione* on Tuesday night at the Queen's College, and a garden-party in the Botanic Gardens on Wednesday afternoon, and an excursion on the Antrim coast, which occupied the whole of Thursday.

A full account of the whole meeting, with the discussions on the papers and views of Belfast and the places of

interest visited, appeared in THE CHEMIST AND DRUGGIST of August 13.

The monthly Council meeting of the Pharmaceutical Society of Ireland was held on August 3. The President alluded to the defeat of the Poisonous Substances Bill, and then went on to comment in severe terms on certain views on the company question expressed in the Society's official organ (the *C. & D.*), which he explained were not theirs.

We published on August 6 a copy of a letter which the President of the Pharmaceutical Society of Ireland sent to the Lord Chancellor on the company-pharmacy question.

In continuation of our Pharmacopœia articles Mr. E. Merck, of Darmstadt, gave his views on the new B.P. (*C. & D.*, August 20). Mr. Merck's remarks carry special weight on account of his position as a manufacturer of pharmaceutical chemicals.

The Congress of the Royal Institute of Public Health opened at Dublin on August 18, and on the same day a Health Exhibition was opened in connection with it at the Royal University.

Professor Tichborne read a paper before the Congress on "The Adulteration of Food and Drugs." Mr. R. J. Downes, President of the Pharmaceutical Society of Ireland, read one on the "Legislation as Regards the Sale of Poisons." Both papers are full of interest to all chemists who take an interest in pharmaceutical politics. They were published in THE CHEMIST AND DRUGGIST of August 27.

We have this month published a new book in the series of *C. & D.* handbooks. It is called "Diseases and Remedies," and is a concise survey of most symptoms and the most modern treatment of ordinary diseases. It is written by a physician, and edited by an experienced pharmacist, expressly for chemists and druggists. The price of this book is 2s. 6d., by post 2s. 9d. "Pharmaceutical Formulas."—Our new recipe-book is still in large demand. We are getting very flattering reviews from all classes of drug-journals, and from all parts of the world. The opinion expressed is that it is unlike any previous book in being thoroughly practical and less costly in price than most others. This book is 7s. 6d. net, by post 8s.

Both books can be obtained in Ireland at the published price from Messrs. Boileau & Boyd (Limited), Dublin.

A

The Month's News.

A "Boy-doctor."

Timothy Dineen, an 11-year-old lad, is creating a sensation at Kanturk, co. Cork, by reason of supposed wonderful "cures" at his hands. He is known in the neighbourhood as the "Boy-doctor," and his therapeutic and medical skill is accounted for in popular superstition by the fact that he was born on a Good Friday and baptised the following Sunday morning. For the last week or two hundreds of men, women, and children, weary-looking and travel-stained, have arrived from the adjacent districts, all anxious to secure the

to him to get out of the way, but instead of doing so Bennett struck the horse on the head with a stick. The blow stopped the animal, but the wheel of the trap struck Bennett, and knocked him down. Dr. Clendening, who was attending the injured man, informed him that the injuries consisted merely of abrasions on the chin, back, and right leg. The case was remanded for the attendance of Dr. Clendening, Mr. English being admitted to bail on his own recognisances.

Crosfield v. Gritton.

In the Dublin Police Court, Messrs. Crosfield & Co., soapmakers, Warrington, brought action against Mr. W. H. Gritton, their late Dublin agent, to recover possession of their branch-premises situate in Talbot Street, Dublin. The question of the Magistrates' jurisdiction in the matter arose

MISS GUILER.

MRS. S. C. NICHOLL.

MRS. GIBSON.

MRS. R. W. MCKNIGHT.



MRS. S. GIBSON.

MISS WATSON.

MRS. CLOTWORTHY.

MRS. J. C. C. PAYNE.

MRS. ELLIOTT.

B.P.C. LADIES' LOCAL COMMITTEE.

good offices of the precocious physician. The lad has established himself in a disused barn, where he receives his visitors from 6 to 9 A.M. daily, these early hours being adopted owing to the peculiar virtue of the "cure" while fasting. The boy's father acts as doorkeeper and keeps order.

The Chemist's Horse.

At the Dublin Police Court Mr. T. J. English, pharmaceutical chemist, 17 Rathgar Road, was charged with negligence in the management of a horse and trap, whereby George Bennett, Charleston Avenue, was injured. Mr. English said the occurrence was purely accidental. He was driving a young horse when a buckle broke. He told his groom to jump off and the horse bolted. He saw Bennett and shouted

and the case was adjourned, but subsequently the plaintiffs stated they would not proceed, and the summons was struck out.

Dr. Merrin's Gas-brackets.

At the Dublin Police Court, on August 20, Denis McCarthy was charged on remand with stealing from the house of Dr. Merrin, M.C.P.S.I., gas-brackets and lead to the value of 3/. It appears that the prisoner gained an entrance to the house, which is undergoing repair, by stating that he was an employé of the painting contractor. John Doyle, a dealer in old metals, was charged at the same time with receiving the articles, knowing them to have been stolen. Both pleaded guilty, and were each sentenced to six weeks' imprisonment with hard labour.

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Chloral for Salts.

At Dublin, on August 22, an inquest was held on the body of a young lady named Eliza Kent, of Rathmines, who, a day or two previously, had taken an overdose of chloral hydrate in mistake for salts. Miss Kent had just returned from a cycle ride, and took what she thought was salts for a headache. A verdict of death by misadventure was returned.

A Policeman Doctor.

Constable Sherry, of the Royal Irish Constabulary, stationed in Belfast, has exchanged the life of a policeman for that of a physician, having graduated at the Queen's College as a medical doctor. Another constable in the same district, named Bradley, is likely to do the same, having already passed his semi-final examination in medicine.

Belfast Mineral Waters.

The cold spring has affected the export of aerated waters from Belfast. According to a return by the Belfast Harbour

of potato-blight. Some interesting stock-jars dating back to 1700 also came in for much attention. A photograph of the exhibit is given in the advertisement-pages of this Supplement.

Messrs. Hayes, Conyngham & Robinson (Limited) had a striking display of their pharmaceutical specialties, including coca-wine, Alkano meat and malt wine, effervescent preparations of caffeine, lithia, salicylate of soda, sulphate of soda, &c., and a large variety of the new B.P. extracts. Erin's violet, the firm's new perfume, was also well in evidence.

Calcium-carbide Factory.

A new company, called the Irish Calcium-carbide Company (Limited), has been formed at Collooney, with a share-capital of 60,000*l.*, to produce calcium carbide for home and foreign use. The directors say they will be able to declare a 20-per-cent. dividend, as the article used for producing acetylene is coming more and more into general use, and bids fair to be the medium for lighting the world in the future.

1 8 2 9 3 10 4 11 5 12 6 13 7 14



1. W. J. GIBSON. 2. JOHNSTON MONTGOMERY. 3. T. M. MOFFATT. 4. S. ACHESON. 5. JAMES TATE.
6. P. J. LYONS. 7. J. H. SHAW. 8. S. CLOTWORTHY. 9. W. J. RANKIN. 10. R. W. MCKNIGHT.
11. J. C. C. PAYNE, J.P. 12. S. GIBSON. 13. JAS. GUILER. 14. J. W. ELLIOTT.

Photo by Abernethy, Belfast.]

B.P.C. LOCAL EXECUTIVE COMMITTEE.

Commissioners the export is for the last three months less by 948 tons than it was in the same period of last year.

The "Healtheries."

At the Health Exhibition, opened in Dublin on August 18, Messrs. Boileau & Boyd (Limited), Bride Street, Dublin, attracted much attention by their well-arranged exhibit. They were showing a complete series of pharmaceutical preparations and powdered drugs, which included the standardised preparations of the British Pharmacopoeia, 1898. There was also a good show of granular effervescent preparations, surgical dressings, medicinal appliances, and disinfectants. "Solansalvo" was also on show; this is the firm's speciality, which they claim to be a perfect preventive

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